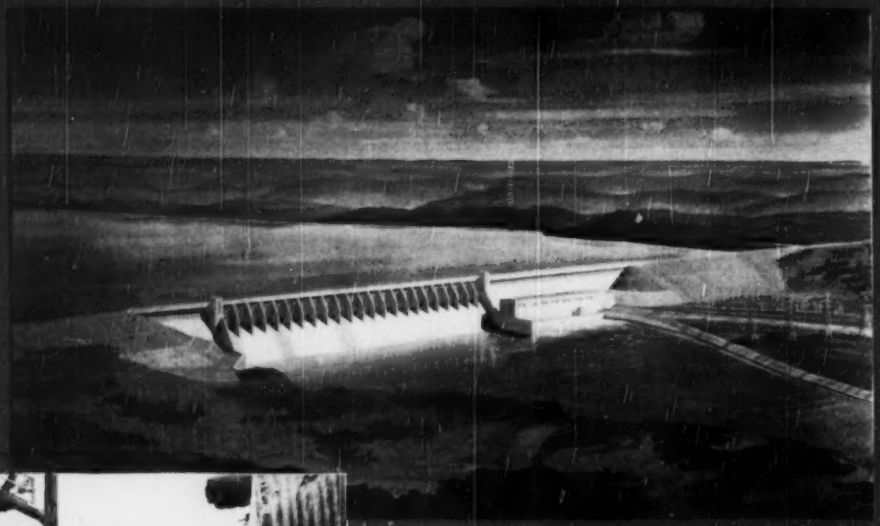
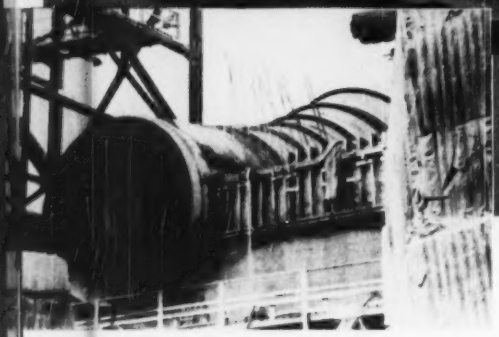
ENGINEERING NEWS-RECORD

★
★

A McGRAW-HILL PUBLICATION

SEVEN PENSTOCKS for the Clark Hill Dam

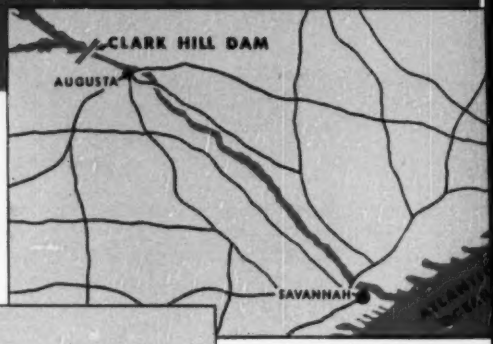




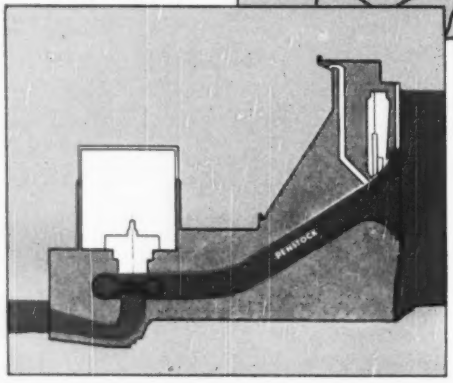
The view directly above shows the first few rings of one of the seven welded steel penstocks we installed at the Clark Hill Dam on the Savannah River near Augusta, Georgia.

The penstocks are 20 ft. in diam. by 110 ft. long and are made of steel plates varying from $\frac{9}{16}$ to 14/16 inches in thickness. We fabricated them at our Birmingham plant and assembled the sections at the dam site. Each penstock will carry up to 4,860 cubic feet of water per second to its turbine. The operating head will vary from 112 to 151 ft. When operating under a head of 136 ft., each turbine will produce about 55,000 horsepower.

Penstocks are typical examples of the heavy steel plate work we are equipped to fabricate and erect for construction projects. Write our nearest office for details.



Below: Diagrammatic cross section of Clark Hill Dam intakes, penstocks, and powerhouse.



The Clark Hill Dam and reservoir is the first in a series of projects for the development of flood control, navigation and hydroelectric power on the Savannah River.

The project is expected to—avert $104,000 annual flood damage—generate 703,000,000 kilowatt hours per year — and increase year-round channel depth to 7.8 feet between Augusta and Savannah. The sketch above shows its location.

CHICAGO BRIDGE & IRON COMPANY

13 LPC MOTOR SCRAPERS MOVING 3½ MILLION TOUGH YARDS!

LIST & CLARK, General Contractor, and PERRY McGLONE, Sub-Contractor, are using LaPLANT-CHOATE MOTOR SCRAPERS on the Burlington R. R. relocation job in Northwest Missouri

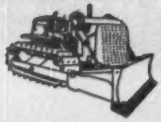
3½ MILLION YARDS of tough heavy material to be moved on a job 42 miles long! That's the kind of earthmoving that calls for rugged, broad shouldered power, big capacity and dependable high speed operation. List & Clark with seven TS-300's and Perry McGlone with six depend on LPC Motor Scraper performance to lick this tough job at a profit-setting pace.

The Motor Scraper has many high production features worth knowing about—ask your LPC Distributor to show you these units in action—get the whole story from men who own or operate them. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa — LaPlant-Choate Sales and Service, 1022 77th Avenue, Oakland, California.

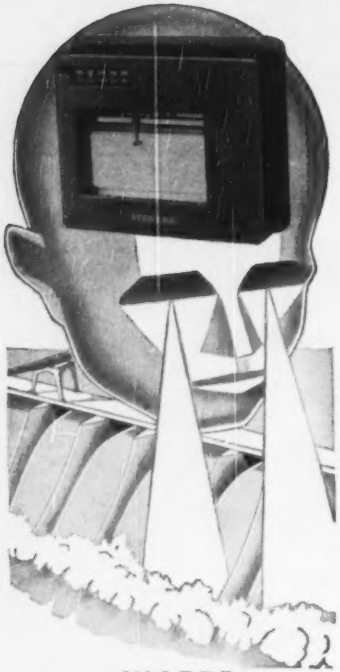
LaPLANT CHOATE

Cable-operated Scrapers in 6-, 8- and 14-yd. sizes for all makes of track-type tractors.

2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.



Hydraulic and Cable-operated Dozers.



WATER
MEASUREMENT
OR CONTROL

STEVENS

GRAPHIC, VISUAL OR
AUDIBLE REGISTRATION

Whether you need a simple staff gage, float gage or complex remote operated recorder, there is a STEVENS instrument to meet your requirements. Water level or flow recorders for weekly service or long periods of unattended operation, direct float operated or remotely controlled; indicators, controls for alarms and pumps... the STEVENS line is complete in the field of water measurement and control. We also welcome inquiries concerning special problems.

Pioneers in the field of water level recording for more than 43 years, LEUPOLD AND STEVENS INSTRUMENTS, INC., have developed and perfected precision water measuring instruments of all types to meet a variety of specific needs, especially for water works, sewerage, irrigation and industrial uses.

Write for literature and information on accurate and dependable STEVENS *water measuring instruments.*

LEUPOLD AND STEVENS
INSTRUMENTS, INC.
PORTLAND 13, ORE., U. S. A.

ENGINEERING NEWS-RECORD

Member

Volume 145 — SEPTEMBER 21, 1950 — No. 12

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

How They're Building Philadelphia's Prestressed Bridge 32
Brazil Plans Its Biggest Highway 35
How to Use Acoustic Materials Efficiently 37
Coal Mining: Stream Pollution Culprit 41
Propose Exchange Center for Structural Engineers 42
Tunnel Enlargement is Taking 12 Years 43
DDT for Termite Protection 44
Navy Pushes Guam Dam in Race Against Rainy Season 47
Perspective—Picketing and Free Speech 124

DEPARTMENTS

Construction Week 17
Construction Trends 19
Editorials 21
News of the Week 23
Legal Decisions 34
Reader Comment 50
Field and Office 53
Developments Abroad 54
Municipal Affairs 58
Education and Research 70
Men and Jobs 64
Obituaries 74
Unit Prices 78
Construction Reports 81
New Products 114

Number of copies of this issue printed 44,801

Managing Editor—Eugene E. Halmos, Jr.
Associate Editors—*New York*, V. T. Boughton (senior associate), J. C. Bumstead, R. H. Dodds, F. S. Merritt; *Chicago*, J. R. Carr; *San Francisco*, N. A. Bowers, L. L. Wise; *Washington*, V. B. Smith
Assistant Editors—*New York*, Melvin Dean, Arthur J. Fox, Jr., T. D. MacGregor.
Staff Assistants—Mary Kiernan, *Research*; Ethel Lyon, *Makeup*; R. P. Munves, *Production*; Louise Barker, Ruth McCarthy, Madalene Smith, *Editorial*.
Business News—Elsie Eaves, *Manager*; E. M. Huber, Jane Lucia, J. A. Mahoney, M. W. Roessler, M. Wetzel.
Contributing Editor—Edward J. Cleary.
Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.
Foreign News Bureaus—London, Franfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City, *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

September 21, 1950 — ENGINEERING NEWS-RECORD — Vol. 145—No. 12

Publication Office—99-129 N. Broadway, Albany 1, N. Y.
Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.

Copyright 1950 by McGraw-Hill Publishing Co., Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder; CURTIS W. McGRAW, President; WILLARD CHEVALIER, Executive Vice-President; JOSEPH A. GERARDI, Vice-President and Treasurer; JOHN J. COOKE, Secretary; PAUL MONTGOMERY, Senior Vice-President, Publications Division; RALPH B. SMITH, Editorial Director; NELSON BOND, Vice-President and Director of Advertising; J. E. BLACKBURN, JR., Vice-President and Director of Circulation. Cable address, "McGraw-Hill New York."

Subscriptions: (1 yr., 2 yr., 3 yr.) U. S. and possessions $6, $9, $12; Pan America, $10, $16, $20; Canada, $8, $12, $16; All others, $20, $30, $40.

Address all communications about subscriptions to Director of Circulation. Price 35¢ per copy.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

B.F.Goodrich

Hauling giant loads over blasted rock this B. F. Goodrich tire outlasts them all

IN ROAD contracting service in Tennessee, North Carolina and Virginia, the equipment pictured above is engaged in the tire-killing business of working its 32,000 pounds over the sharp rock of blasted terrain. Add a total load weight of 16 cubic yards of rock and earth, and it's easy to understand why bruises and blowouts make off-the-road tires a major cost item in such equipment.

Such was the story, at least, until B. G. Young & Sons of Johnson City, Tenn., owners of the fleet, turned to B. F. Goodrich *double nylon shock shield* tires to combat the high cost of tire mortality in such rugged service. Since then, costly road delays and work interruptions have been cut to a fraction of what they had formerly considered normal. The BFG Universal tires shown above, for example, have been in service for well over a year—*and not one has yet been removed from its wheel.* Mr. B. G. Young says, "The service we obtain from B. F. Goodrich tires with nylon shock shield is far and beyond anything we have ever experienced before."

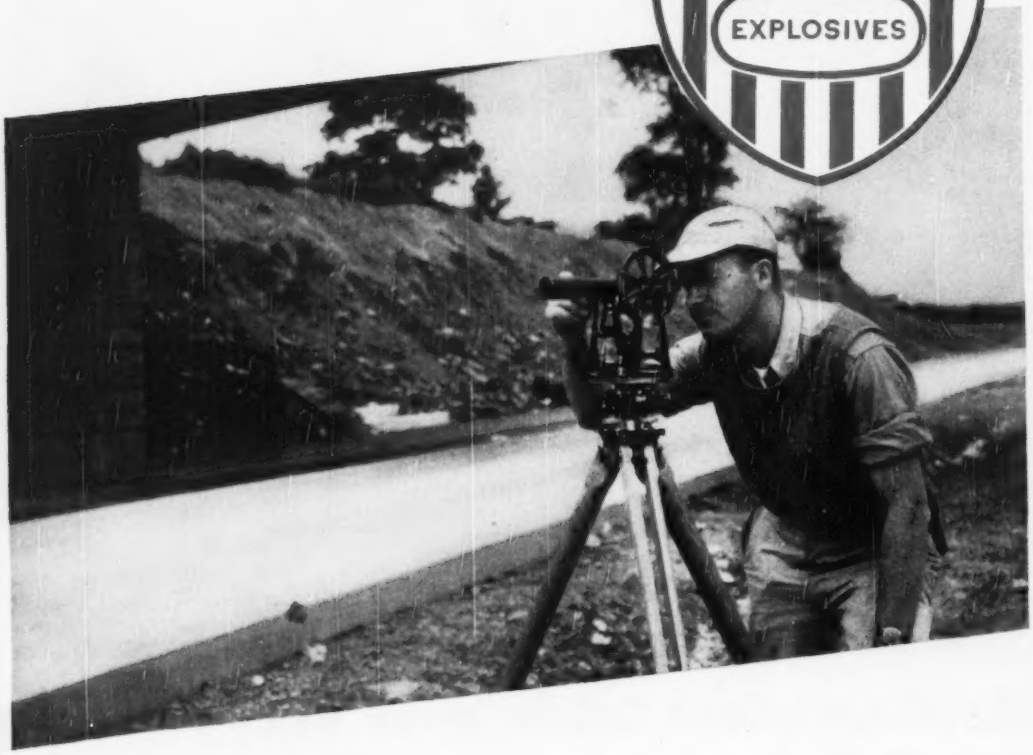
Only B. F. Goodrich off-the-road tires have the *double nylon shock shield.* (It's patented.) Layers of nylon cord, built between the tread and body plies, shield the cord body by smoothly distributing shocks and strains. This plus factor of extra mileage and service hours in BFG tires is yours at no extra cost. Then, too, because there's a specially-designed deep tread for every need, you can look forward to good traction far beyond the time when ordinary tires must be changed over to service on free-rolling wheels.

So see your B. F. Goodrich dealer. Specify BFG tires for your new equipment. Enjoy longer tire service and lower overhead offered you by *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER

A GOOD SHOT EVERY TIME
WITH AMERICAN EXPLOSIVES

AMERICAN CYANAMID COMPANY
EXPLOSIVES



AMERICAN Explosives—because of their proved reliability—are now at work moving earth and rock on the new extension of the Pennsylvania Turnpike, which is being lengthened eastward to the outskirts of Philadelphia, westward to the Ohio border.

On this and similar jobs, you can be sure of the best results *every time* because every shot fired with AMERICAN Explosives is backed by years of careful research, unremitting laboratory control and modern methods of production.

Available from strategically located plants and distributing magazines, AMERICAN Explosives come in a wide variety of strengths, velocities, and densities for your convenience . . . remember, make your next order AMERICAN.

Capable Field Engineers are Available at Your Call

★ High Explosives ★ Permissibles
★ Blasting Powder ★ Blasting Accessories

AMERICAN Cyanamid COMPANY
Explosives Department
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Sales Offices: Pittsburgh, Pa. • Bluefield, W. Va. • Scranton, Pa.
Chicago, Ill. • Pottsville, Pa. • Maynard, Mass.

MURPHY DIESELS
start instantaneously, even in the coldest weather

MURPHY DIESEL

IF you've ever gone through the cold morning ritual of starting ordinary diesels, you've got a surprise in store for yourself the first time you start a Murphy Diesel. Hot or cold she kicks off like a well kept automobile engine at just a touch of the electric starter lever. You don't need blow torches or tremendous patience to start a Murphy Diesel even at zero temperatures. In the words of John S. Wenger of Wenger and Sensenig, Paradise, Pa., *"The easy starting on cold mornings...leaves nothing to be desired."*

Right now, before the cold really sets in is the time to get ready. Have your Murphy Diesel Dealer give you full details on Murphy Diesel cold weather starting and the many other advantageous features of Murphy Diesel Power—or write direct.

MURPHY DIESEL COMPANY
5311 West Burnham Street • Milwaukee, 14 Wisconsin

Heavy duty power

for construction

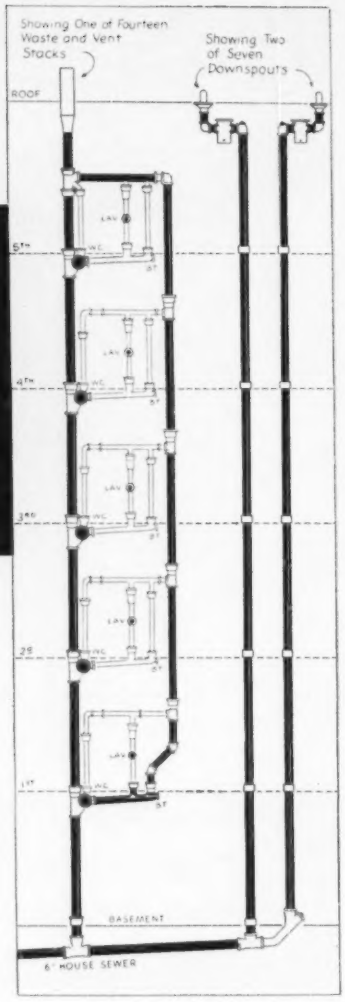
24 models of Murphy Diesel Engines and Power Units for construction, 90 to 220 H.P., 1200 and 1400 RPM Generator Sets, 60 to 133 K.W.

Blueprint for Construction Economy

with CLOW "IPS"* (THREADED) Cast Iron Pipe

New 7500 South Shore Drive Apartment Building, Chicago, Illinois

ARCHITECTS: Frank A. McNally & Associates
PLUMBING CONTRACTORS: Fortes, Love & Sieben
CONSULTING ENGINEERS: E. R. Gnichtel & Associates



The drawing at right shows a typical section of the plumbing in the new 5-floor, 100-room apartment building, (illustrated above) with Clow "IPS"* (threaded) Cast Iron Pipe indicated most prominently. Approximately 2000 feet of this pipe was installed for waste, vent and downspout piping, and significant savings in man-hours and material during construction were effected by its use. The pipe was supplied threaded and pre-cut to exact lengths. Caulking on the job was reduced to a minimum. This speedy installation boosted general efficiency, as it allowed plumbers to work one floor ahead of steel workers and carpenters. Of course, corrosion-proof Clow "IPS"* (threaded) Cast Iron Pipe was primarily chosen for this ultra-modern building as it assures dependable service for a century or more.

Clow "IPS"* (threaded) Cast Iron Pipe is available with plain or threaded ends, in 3, 4, 5, 6, 8 and 10″ sizes in 18′ random lengths. Also furnished with integral caulking hub on one end (other end plain) in 18′ random lengths in 4, 6 and 8″ sizes.

*"IPS" is iron pipe size O. D.

CLOW "IPS" CAST IRON PIPE CAN BE

on the job, with ordinary tools of the piping trade.

JAMES B. CLOW & SONS

201-299 North Talman Avenue • Chicago 80, Illinois

and their National Cast Iron Pipe Division, Birmingham, Alabama; subsidiaries Eddy Valve Co., Waterford, New York; Iowa Valve Co., Oskaloosa, Iowa.

Use JOY AIR-POWER and TOOLS

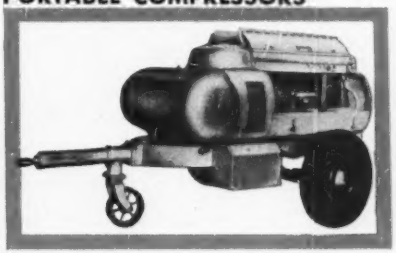
for all-around best performance on DEMOLITION and FOUNDATION JOBS

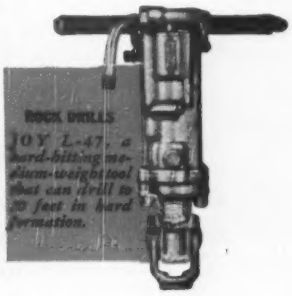
JOY Portable Compressors and "Silver Streak" Air Tools make a highly efficient, time-and-money-saving team—the most modern units you can put on the job. They're light, compact and easy to handle, yet ruggedly built for real heavy-duty service. JOY Portables are available in seven sizes, ranging in capacity from 60 to 630 CFM at standard pressure. JOY Air Tools feature the exclusive "Dual Valve" that makes air do more work, plus cadmium plating for better lubrication, closer tolerances, and prevention of rust and scoring. • Let us show you how JOY equipment can reduce your costs, and produce more work per man-hour. *Write for bulletins, and ask for an actual demonstration.*

PAVING BREAKERS

JOY K-81, a rugged tool capable of sustained operation on the heaviest demolition work.

PORTABLE COMPRESSORS





ROCK DRILLS

JOY L-47, a hard-hitting medium-weight tool that can drill to 20 feet in hard formation.

SHEETING DRIVERS

JOY Q-81, an adaptation of the K-81 for driving wood or light steel sheeting.

BACKFILL TAMPERS

JOY C-35, an easy tool to handle, yet delivers powerful blows for faster tamping.

SPADERS

JOY M-2, a light tool for digging in clay, shale, hardpan, or hard-frozen ground.

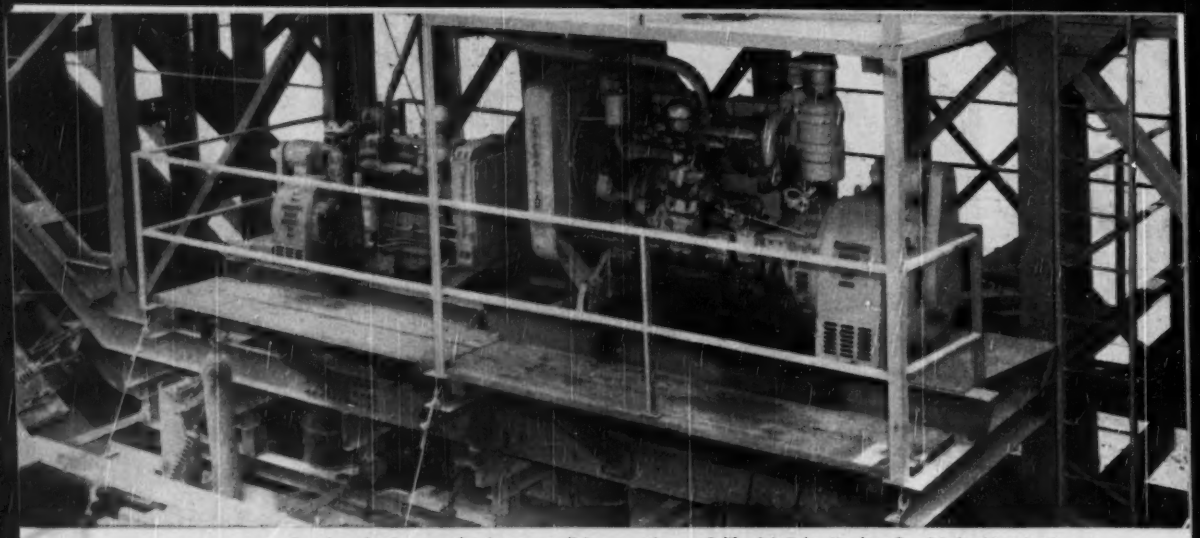
Consult a Joy Engineer

W&D C2060

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO



Complete electric power for the concrete-lining operation on California's Delta Mendota Canal is furnished by these two "Cat" Electric Sets — a D4400 and a D8800. Owned by Morrison-Knudsen Co., Inc., and M. H. Hasler, Tracy, Calif.

"Cat" Electric Sets

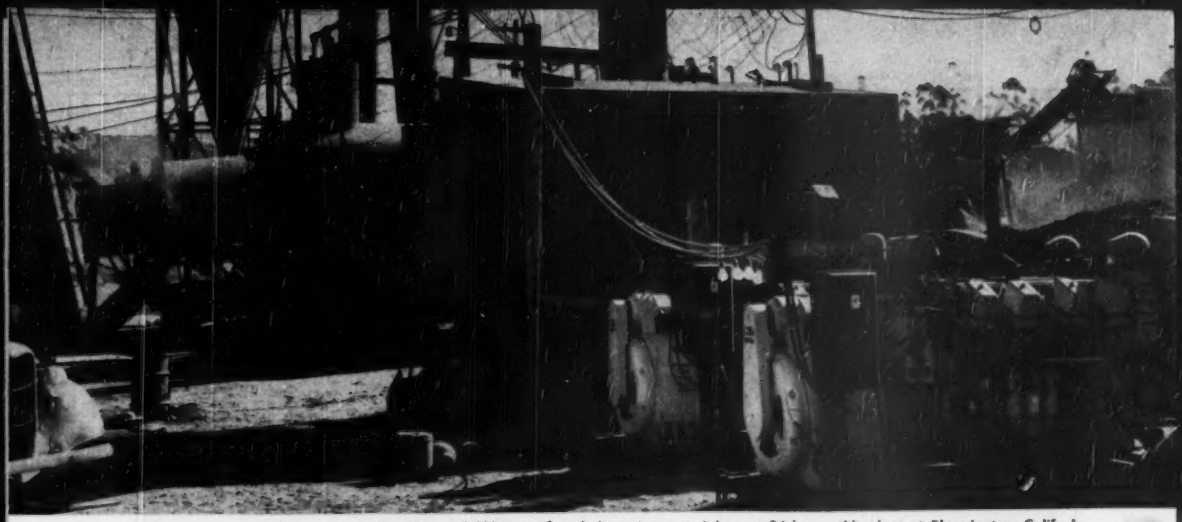
FOR PAY-OFF POWER ON THE JOB

There's no profit in down-time. The only kind of power that pays off on the job is power you can count on for steady, unfailing operation. That's why construction men who are making money with other "Cat" products choose dependable "Caterpillar" Diesel Electric Sets to power their electrically driven machinery. They get the full advantage of built-in "Caterpillar" stamina, a familiar engine, simple in design and easy to operate, and the matchless service supplied by "Caterpillar" dealers everywhere.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

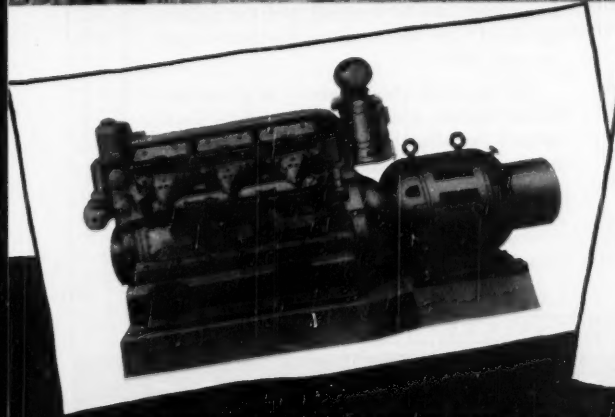
CATERPILLAR

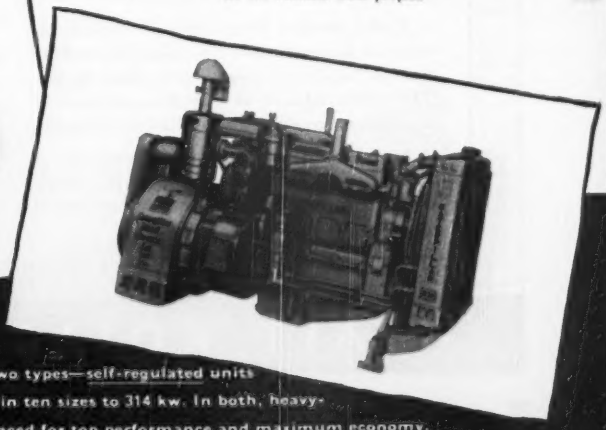
DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT



Turning out 1,000 tons of asphalt paving material every 24 hours, this plant at Bloomington, Calif., is powered by two "Caterpillar" Diesel D17000 Electric Sets. Owner, George Herz & Co., San Bernardino.

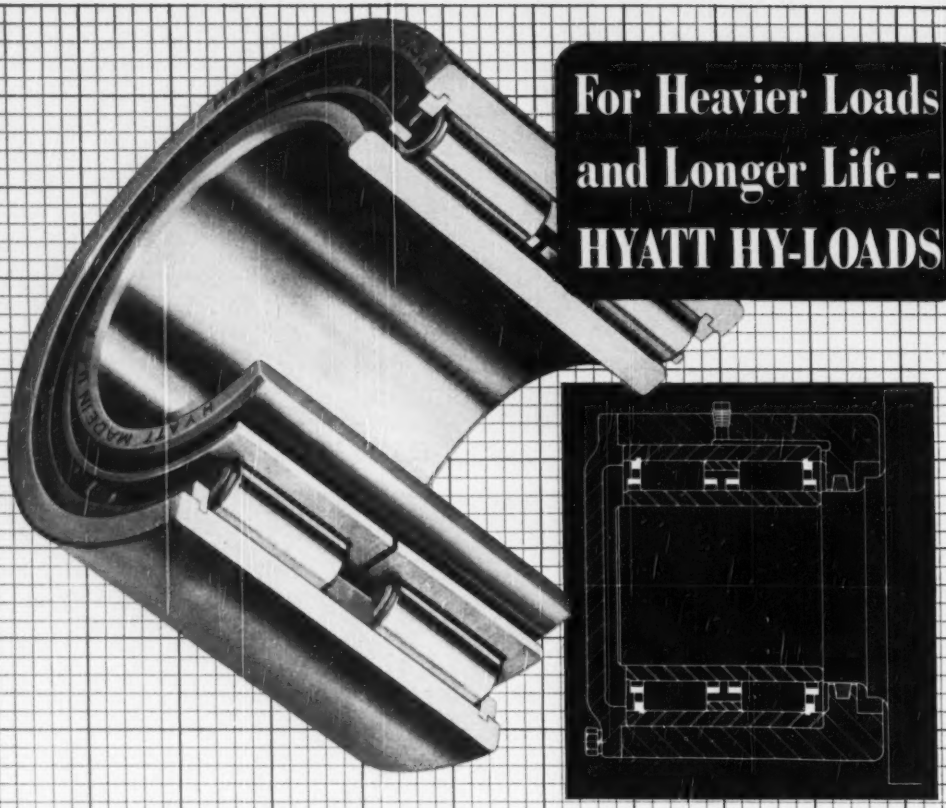
Lytle, Amis & Green, Moses Lake, Washington, use a "Cat" D3400 Electric Set to supply lighting for night operations on the Potholes Dam project.





"Caterpillar" Diesel Electric Sets are available in two types—self-regulated units in six sizes to 100 kw. and externally regulated sets in ten sizes to 314 kw. In both, heavy-duty generators and engines are matched and balanced for top performance and maximum economy.

For Heavier Loads and Longer Life -- HYATT HY-LOADS



The cut-away Hyatt Hy-Load Roller Bearing illustrated is the A-TS Duplex Type, 6200 Series. Duplex type Hy-Load bearings are much wider and have much greater load capacity than other standard series bearings of the same bore size. Two roller-separator sets are assembled with the outer race as a unit. The roller sets are spaced by a steel ring centered in the bore of the outer race.

While Duplex Bearings can sustain extremely heavy loads, the allowable deflection of the shaft is usually a limiting factor. The extra capacity is therefore utilized, in most cases, to meet a greater life requirement.

The straight, separable inner race type of construction makes possible simple methods of assembling machine parts and most efficient lubrication sealing. It also allows axial expansion or slight oscillation without cramping the roller ends.

The separable parts are freely interchangeable as any inner race will fit any roller assembly of the same number. The inner race can be omitted and the rollers operated directly upon a hardened and ground shaft.

The drawing shown above is a conventional bearing arrangement for a long shaft or roll and illustrates the application of a 6200 series bearing. All Hyatt Hy-Load Bearings are shown in our new Hy-Load Bearing Catalog, number 547. Write for your copy today. Hyatt Bearings Division, General Motors Corporation, Harrison N. J.

HYATT ROLLER BEARINGS

NEWS BRIEFS

Air lift—The Port of New York Authority will buy a $24,500 helicopter so that its operating and engineering staff can get from one to another of its four major airports in the least possible time.

Nutmeg state housing—All of the $65,000,000 moderate rental program of the Connecticut State Housing Authority is either under construction or occupied, Chairman George E. Carr has announced. These homes built by local housing authorities with funds borrowed at low interest from the state are providing homes at an average rental of $42 a month for a 2-bedroom unit. The 1½% interest paid by eligible buyers on their state mortgage loans covers all expenses of the program.

Spend to save—The New Jersey highway department has just moved into its new quarters at 1035 Parkway Ave., in suburban Trenton. Formerly located in the State House Annex, since 1929 it had spread to six other mid-city locations for which high rents were being paid. By dispensing with unnecessary details, the structure was erected at a cost of $1.04 a cu.ft. It is shaped like two Ys placed base to base. The center section is 220 ft long and each wing 120 ft.

OK for big Indianapolis plants—Marion County Plan Commission has approved rezoning of a 105-acre tract for the huge Dodge plant of the Chrysler Corp., and the last obstacle to the $7,000,000 Indianapolis plant to employ 5,000 has been removed by the City Sanitation Board, which approved a plant connection with the city's sewerage system (ENR Aug. 24, page 26).

Cost-saving building system—The Youtz-Slick Lift-Slab building method (ENR, June 29, page 38) has been licensed to James Stewart & Co. of New York, Dallas and Chicago by the Institute of Inventive Research, San Antonio, Tex. Harold Vagtborg, director of the institute, says that Stewart is licensed not only to use the method itself, but was empowered to supply the service to other contractors. The license is non-exclusive and purely domestic. By this system reinforced concrete roof and upper floor slabs are poured on the ground and then raised into place with automatic hydraulic lifting equipment.

(Continued on page 12)

FOR THE PROTECTION OF PROPANE STORAGE

AND—*Name Your Hazard!*

Industrial America is rapidly becoming fire-hazard conscious. Obsolete and inadequate systems of protection are being replaced by equipment which has clearly demonstrated its ability to protect.

Automatic FIRE-FOG, a leader among modern fire protection systems, provides instantaneous control and extinguishment of even the toughest fires. It's specifically designed for your particular risk—scientifically engineered so as to assure maximum protection for every area vulnerable to fire.

Fully approved by all leading insurance authorities, *Automatic* FIRE-FOG may be just the protection you've been seeking for the hot-spot area that is constantly threatening the continuity of your plant operations.

Get in touch with your nearest *Automatic Sprinkler* fire protection engineer for details on FIRE-FOG or other types of fire extinguishing systems. Name your hazard—we'll protect it!

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO

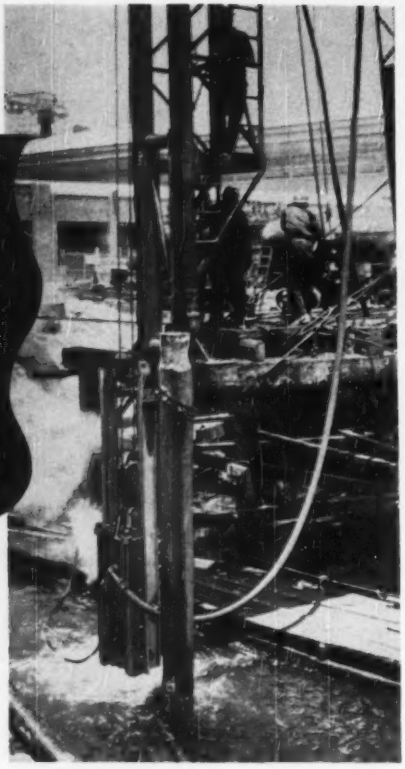
"*Automatic*" *Sprinkler*

FIRST IN FIRE PROTECTION

DEVELOPMENT • ENGINEERING MANUFACTURE • INSTALLATION

OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

PILE DRIVING under water



McKiernan-Terry 11-B-3 Double-Acting Pile Hammer driving 85-ft. steel H-beams for the 4000-ft. bridge over Corritos Channel. Terminal Island, Cal. Proctor & Kuhn, sub-contractors to United Concrete Pipe Corp.

1170 STEEL PILES had to be driven under water during the construction of this longest, highest vertical-lift bridge on the Pacific Coast. 390 steel piles, 85 feet long, were hammered full length, without follower, into unstable soil to required elevation. At cut-off the anvil block or base of the hammer was 12 feet below the surface of the water. In addition, 780 shorter piles were driven for the lift-span piers. • McKiernan-Terry Double-Acting Pile Hammers were chosen for the job because (1) they were the first pile hammers developed for underwater driving and (2) they have held an unsurpassed reputation for underwater driving dependability through the years. • 17 sizes of hammers and extractors are available in the complete McKiernan-Terry line. Write for bulletin giving all the facts.

McKIERNAN TERRY

GRAB BUCKETS

COAL TOWERS

TRANSFER BRIDGES

HONING TO 48" I.D.

McKIERNAN-TERRY CORPORATION, Manufacturing Engineers, 13 Park Row, New York 7, N. Y.
PLANTS: HARRISON, N. J., DOVER, N. J.

Expensive roads—Cost of maintaining Oregon highways last year reached an all-time high of $11,400,000. Excessive frost damage was largely responsible for the heavy cost, according to R. H. Baldock, state highway engineer. Maintenance cost per mile varied from as low as $500 on some eastern Oregon highways, to $7302 on the Pacific highway between Ashland and the California state line. Snow removal in the Siskiyou mountains accounted for most of the cost in that section.

Bazookas to the rescue—When the Alaska Railroad was blocked by a slide in the Nenana Canyon south of Fairbanks and an overhanging cliff menaced ditchers and bulldozers, railroad officials called on the Army. Soldiers with bazookas shot away the overhang with tank-killer rockets, after which the work crews cleared the right-of-way.

Never underestimate the power—Early in August five housewives asked the trustees of Springfield Township, Ohio, to lay the dust and repair the chuck holes in Redmond Road. "Sorry, ladies," the trustees said, "it'll be some time before we can get to that. Why, we don't have the manpower to paint even our own office." The ladies said they would paint the office, if the trustees would fix the road, which they did. Then the five women, wearing blue jeans, descended on the township office with scrub buckets, brushes, and paint and carried out their part of the bargain.

Save that tooth!—Milwaukee, Wis., will introduce fluorine into its drinking water supply next year as a means of preventing tooth decay among children. Milwaukee is said to be the largest city to adopt this plan so far.

THE COVER

Rapid progress is being made by the W. E. O'Neil Construction Co., general contractor, on the Onondaga County War Memorial Auditorium in Syracuse, N. Y. Concrete for double 19½-ft bays of the thin-shell roof is being placed in two-week cycles. Forms are carried on an unusually light, movable timber falsework.

The shell is only 3 in. thick. It is supported by slender arch ribs, which have a rise of 28 ft in a span of about 160 ft. The ribs, in turn, are supported on cantilevers about 37 ft above floor level, so that the clear span of the roof totals 204 ft, and the height of the shell at the center is 65 ft.

Full details of the design and construction of this unusual structure will be given in a subsequent issue of ENR.

It couldn't happen with

LAMSON *All-Steel* LOCK NUTS

Ever try to find a nut in a plowed field or in high grass? It rates in impossibility right along with finding the proverbial "needle in a haystack".

But ordinary nuts are sure to come loose when subjected to excessive vibration.

Lamson Lock Nuts *can't come off* unless backed off with a wrench. What's more they can be reused time and time again without losing their gripping power.

You can win your customer's goodwill and approval by using Lamson Lock Nuts wherever vibration works to loosen bolts and nuts.

Send for this Handy Reference Brochure on Heavy Machinery Fasteners Today!

The LAMSON & SESSIONS *Co.*

General Offices: 1971 West 85th Street, Cleveland 2, Ohio

Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

MAKERS OF FINE FASTENERS SINCE 1866

BOLTS • NUTS • SCREWS • COTTERS • STUDS • RIVETS • SPECIALS • SCREW MACHINE PRODUCTS

.CUT ALONG THIS LINE.

MONEY-SAVER FASTENERS *Pay Dividends*

LAMSON LOCK NUTS: Economical, vibration-proof. Can be re-used repeatedly.

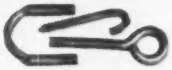
"1035" SET SCREWS: Cup point type, hardened, heat-treated.

COTTER PINS: Steel, Brass, Aluminum and Stainless Steel.

TRACTOR BOLTS: Made to manufacturers' standards.

"1035" CAP SCREWS: Hi-Tensile heat-treated steel.

MILLED STUDS: Concentric, accurate, in a full range of sizes.



"BENT" BOLTS: Including U Bolts, Eye Bolts, Hook Bolts, etc.

Wire Rope Clips: Hi-Center saddles, extra-strength U Bolts.

PIPE PLUGS: Forged Steel, heat-treated.

FOR MORE INFORMATION ON LAMSON *Money-Saver* FASTENERS . . . . . CHECK COUPON and CLIP THIS STRIP

The Lamson & Sessions Company
1971 W. 85th St., Cleveland 2, Ohio

Roller-Smith RS-25 3 pole Circuit Breaker. Cut-away shows contacts in closed position; interior of arc quencher. Mounting panel is K&M Ebonized Asbestos; arc chute insulation is K&M Monobestos.

Breaker components stay put when mounted on K&M EBONIZED ASBESTOS

For positive action, circuit breaker parts are rugged and strong—and must be mounted the same way. Yet, in order to operate on a whisper of trouble, they must be assembled with precision. ROLLER-SMITH meets both these requirements by mounting RS-15 and RS-25 Breakers on panels of K&M Ebonized Asbestos.

K&M Ebonized Asbestos has high mechanical strength—resists shock and vibration. It's strong dielectrically, also, and is highly resistant to the effects of temperature changes. Yet, for all its strength, K&M Ebonized Asbestos is easy to handle and cut, machines neatly, drills quickly—saves time and trouble in production and assembly.

This unusual K&M mounting material is made of asbestos fiber and portland cement, pressure-molded to high density, and impregnated with special insulating compound. Standard sheet thicknesses are from $\frac{1}{8}$" to 4".

If you manufacture or use switchboard mountings, bus bar runs, switchgear compartment linings, test tables, bench boards, or any panel-mounted electrical equipment, it will pay you to investigate K&M Ebonized Asbestos. We'll be glad to send complete information upon request.

Where high heat-resistance is needed — K&M MONOBESTOS

In the breaker photo above, you see K&M Monobestos used as insulating material in the arc quencher unit. Monobestos was selected for this important service because it has both heat resistance and durability. K&M Monobestos is easy to cut and to drill. Complete information on request.

Nature made Asbestos . . . *Keasbey & Mattison has made it serve mankind since 1873*

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

IN SEARCH OF *Improved Performance*

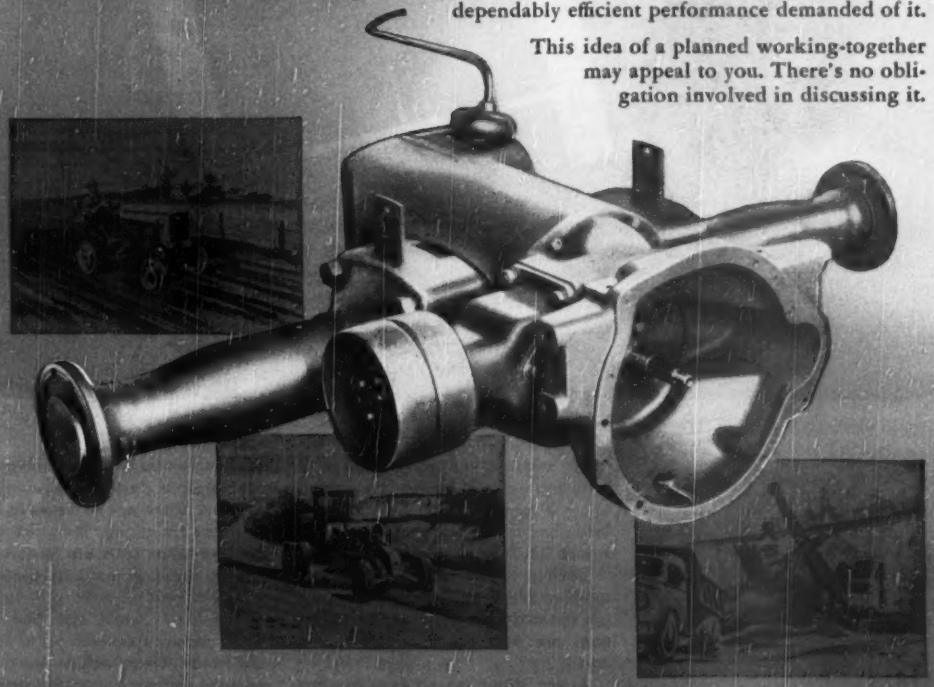
MANY INDUSTRIES WORK WITH CLARK

A number of leading manufacturers of heavy machinery—both agricultural and industrial—have found it "good business" to work with Clark.

To that intelligent collaboration the machinery manufacturer brings a wealth of practical knowledge concerning the job to be done; and Clark contributes its own unsurpassed experience, accumulated during 34 years of useful service to Industry in the fundamental field of transmitting power.

Back of that sound team-work is the unique advantage inherent in Clark's Engineering Laboratory. Here equipment is subjected to testing procedures comparable to a lifetime of punishing service—in order to certify that it will deliver the dependably efficient performance demanded of it.

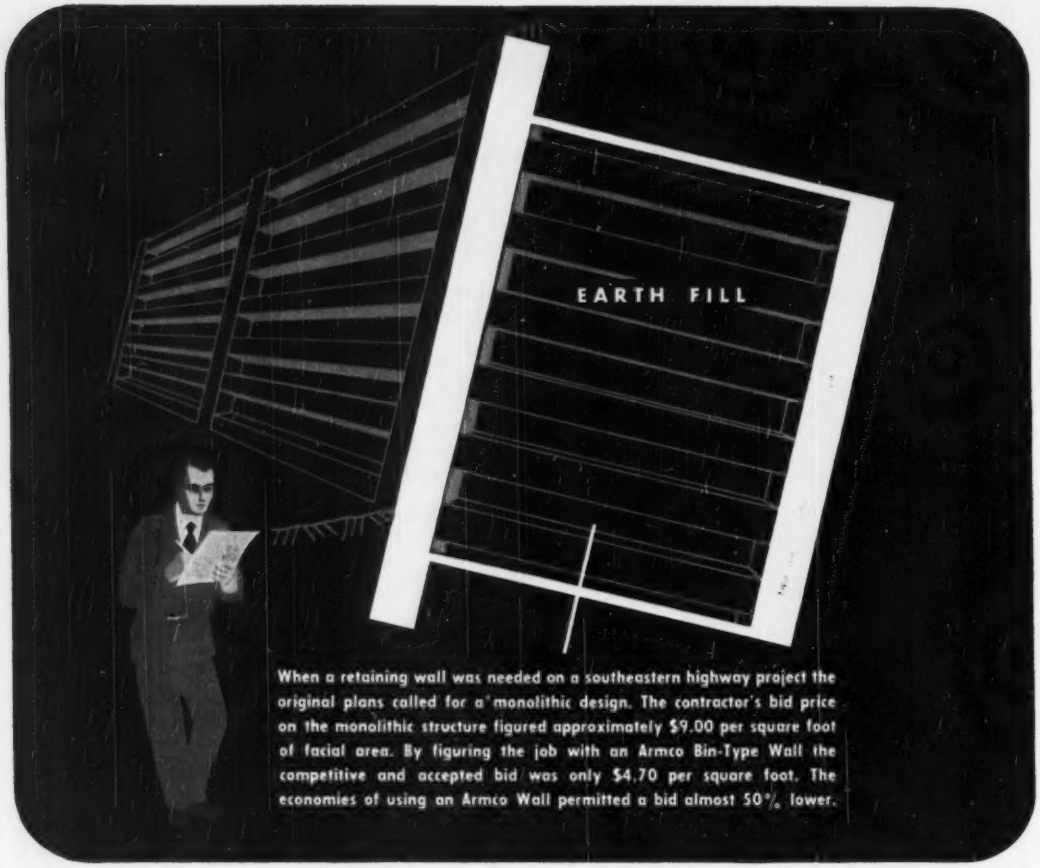
This idea of a planned working-together may appeal to you. There's no obligation involved in discussing it.



CLARK EQUIPMENT COMPANY, Buchanan, Michigan

Other Plants: BATTLE CREEK AND JACKSON, MICHIGAN

PRODUCTS OF CLARK — TRANSMISSIONS FORK TRUCKS & TRACTORS AXLE HOUSINGS
GEARS AND FORGINGS RAILWAY CAR TRUCKS ELECTRIC STEEL CASTINGS
FRONT AND REAR AXLES FOR TRUCKS AND BUSSES METAL SPOKE WHEELS TRACTOR UNITS



When a retaining wall was needed on a southeastern highway project the original plans called for a monolithic design. The contractor's bid price on the monolithic structure figured approximately $9.00 per square foot of facial area. By figuring the job with an Armco Bin-Type Wall the competitive and accepted bid was only $4.70 per square foot. The economies of using an Armco Wall permitted a bid almost 50% lower.

Contractor Cuts 50% on Retaining Wall Bid

When construction projects call for a retaining wall experienced contractors know a ready answer. They can bid lower and make a good profit with an Armco Bin-Type Wall.

Savings start immediately. Less material needs to be transported to the job site and the lightweight metal sections are economical to handle and haul.

Armco Walls are so easy to erect that unskilled labor can do it in any season. Little excavation is the rule. Usually you only excavate for the outline of the bins. Earth in the center doesn't have to be disturbed. Backfilling is done as the job progresses and the hazard of undermining adjacent ground during construction is arrested. There are no forms to build, no delay for curing. The work moves fast and labor costs are low.

Keep profit up and bids low by figuring that next job with an Armco Retaining Wall. You'll also find other Armco products economical to handle and install. These include MULTI-PLATE for large drainage structures and corrugated metal pipe for drainage and subdrainage work. Write for data on your specific needs. Armco Drainage & Metal Products, Inc., 4160 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

Export: The Armco International Corporation

ARMCO RETAINING WALLS

THE CONSTRUCTION WEEK

BUSINESS JUST ABOUT AS USUAL—That's the prospect for the time being, as far as the Defense Production Act's administration is concerned. There won't be many new orders from Washington in the near future—and those few will be relatively easy to live with. In three to six months, however, Washington's economic directives will become more pervasive. Four economic fronts where administrators with new power will move: Credit restrictions, control of critical materials, taxes and price-wage controls.

NON-DEFENSE SPENDING CUTBACKS—Many federal agencies have been given Sept. 21 as the deadline for specifying non-defense projects to be cut from programs. Bureau of the Budget has set the date and will receive the reports. Cuts are in compliance with Omnibus Appropriation Act's rider requirement that $550,000 worth of work is to be removed from the approved-project list. (ENR Sept. 14, p. 33.) Agencies make the choice of work to be removed.

EMERGENCY CLAUSES—The Detroit Chapter, Associated General Contractors of America, is one of several AGC chapters that have drafted emergency building contract clauses for use by their members. These clauses, which anticipate possible work delays, changes in labor or material prices, and contract termination conditions, would become effective in the event of presidential declaration of an emergency.

WHO WANTS THE LUSTRON PLANT?—Reconstruction Finance Corp. says that General Electric wants to take over the Lustron plant in Columbus, Ohio. GE isn't the only one who is after the plant, though other seekers aren't named. However, RFC won't do anything about leasing or selling the plant until Lustron's foreclosure snarl is cleared up.

GRAVEL IN ASHTABULA—A gravel pit owned by the city of Ashtabula, Ohio, has petered out. The city wants to buy another, but the local teamsters union objects, preferring that the city buy gravel from suppliers, whose trucks are driven by union members. Union members see no point in paying taxes for something that will take work from them. Ashtabula will buy 5,000 tons from suppliers, to get relative cost figures on commercial vs. city-owned gravel. If city-owned gravel is no more costly than commercial gravel it is probable that the city will buy the new pit—and haul with city-owned trucks.

IMPATIENT OR REALISTIC?—Cleveland's Law Director L. C. Howley has proposed the boldest, biggest and fastest construction program in the city's history—an integrated $150,000,000 freeway system, to be built in three years. "Cleveland can waste no more time fiddling with State Highway Department's piecemeal construction . . . (we) must have a modern transportation system now, not 30 years from now." No official action has been taken on Howley's proposal, but he is confident that voters would support financing.

MORE PIPELINES THAN RAIL LINES—The natural gas industry passes the word that its 282,000 miles of pipelines tops the country's railroad mileage by 50,000. Still more pipeline mileage is on the way, with 26,500 authorized and 12,700 pending.

TURNPIKE SAFETY—Alarmed by significant increases in fatal accidents on the Pennsylvania Turnpike, the road's administrative body is taking steps to increase traffic policing along the route, and to obtain some jurisdiction over the police force. The route is patrolled by state troopers whose salaries and expenses are paid by the commission, but whose orders come from the state police commission. The police commission assures cooperation, though details of the new plan have not been received.

A PLAY ON WORDS—When President Truman spoke on the Defense Production Act he stuck carefully to an innocent-looking distinction of words written into the act. The act refers to "price ceilings," but it uses the word, "stabilization" in connection with wages. The importance of such careful choice of language—both in the law and by the President—is best understood by recalling World War II experience with price and wage control. Prices were controlled by establishing dollars-and-cents ceilings; it was against the law for goods to be sold above a certain set figure. In contrast, wages were stabilized. This meant that they were permitted to rise by various devices, such as the Little Steel formula and "fringe benefits." Once again, price control probably will be more stringent than wage control.

BETTER LUCK THIS TIME—Financing arrangements are progressing for a bridge across the half-mile narrows in the harbor of Halifax, N. S. Two ill-fated bridges have occupied the site. The first, built in 1885, was destroyed by a hurricane in 1891. The second, built in 1892, failed a year and a half later.

TOUGH DECISION—No easy chore faces the six-man selection committee in choosing a building site for the new $11,000,000 Quartermaster laboratory. Proposals have come in for 278 locations in 40 states. A lighted firecracker would be easier to handle, the board agrees. No matter which site is selected, communities are going to feel burned up.

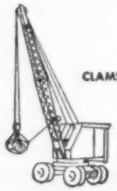
Announcing!

BAY CITY 25CW CRANEWAGON

- SELF-PROPELLED
- ONE-ENGINE DRIVE
- ONE-MAN OPERATED
- HYDRAULIC STEERING
- 8 RUBBER TIRES
- AIR BRAKES
- TWO AXLES

Now you can get BAY CITY performance and efficiency in this NEW 25 CW self-propelled, one-man operated, one-engine CraneWagon. Rated at 6½ ton capacity for use with ½ yard buckets, the 25 CW is fully convertible — packed with well-known, proven BAY CITY features that provide greater mobility. Travel speeds range from 1.8 to 9.9 M.P.H. with powerful traction on all 8 heavy-duty tires plus hydraulic steering. You will want to know more about this fast, easy operating, convertible CraneWagon which has just recently been added to the BAY CITY line. Write for Bulletin 25 CW-A. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN.

SHOVEL


CLAMSHELL

DRAGLINE

TRENCH HOE

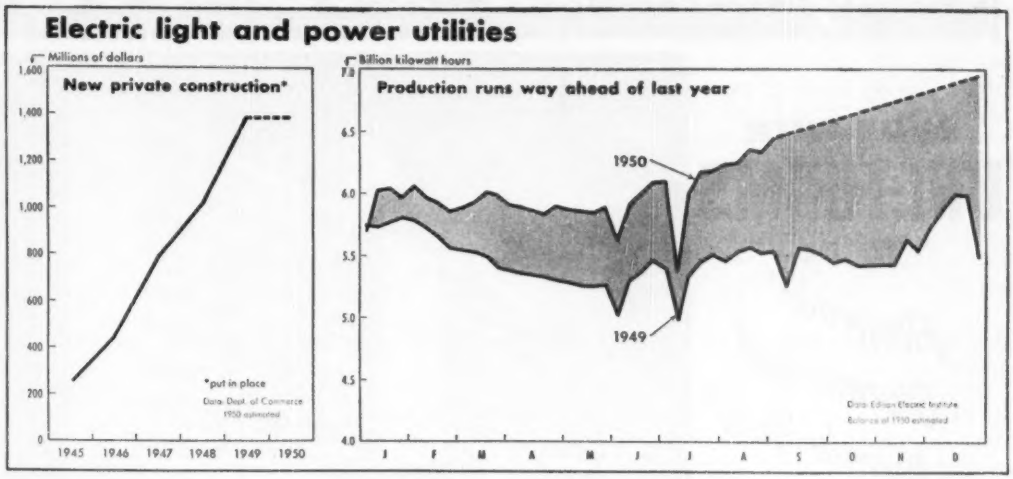
MAGNET

BAY CITY

170

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

CONSTRUCTION TRENDS



UTILITIES SURGE AHEAD

Electric utilities have set their expansion sights sharply higher. In fact, plans for future expansion are growing so rapidly that even the industry views them with wonderment.

By all the signs, construction on electrical systems next year will be markedly larger than this.

McGraw-Hill's ELECTRICAL WORLD estimates that output of electric power will jump 13% this year over last. Next year, 1951, will see another gain of 11% or better. The charts on this page show how the industry has pushed up its production in the last few years and how construction volume has gained by leaps and bounds.

What's important is that the industry gains in the last few months—plus mobilization requirements—have scrapped all past construction forecasts.

Only this spring, in May, ELECTRICAL WORLD estimated that with normal growth, the industry would double its capacity by 1960, triple it by 1965. That seemed phenomenal. But now those schedules have been telescoped.

As it looks now, the industry will expand so rapidly that it will reach its 1955 targets sometime in 1953. The pace of normal growth will be almost doubled.

Where the private electric companies have been spending about $2.2 billion a year for new plants and equipment, they will be spending $2.5 billion a year or more in the next two years. Of that expenditure—more than 50%—about $1.4 billion in 1949—is recorded as construction by the Department of Commerce figures.

In short—utility construction may well gain more than 10% next year.

The impetus of mobilization will force still more rapid expansion. In 1940, electric utilities had about a 15% reserve capacity. And in some areas—TVA and the Northwest—there were big surpluses of power. Aluminum plants and atomic energy plants had ready-made power sources.

Today the U. S. has no such great pools of power in reserve. Utilities do have reserve capacity for the country as a whole. But production of aluminum is limited by power shortages. The Northwest has a power shortage. And increasing industrial production is pushing the industry to new output records.

Because it is essential, electric power undoubtedly will have priority in next year's construction picture. Where restrictions may cut back housing and commercial construction, electric utility work will almost certainly hit new records.

Prospects for other utility construction are not yet clear.

Natural gas ranks second after electric utilities—with about $770 million worth of construction last year. It is likely to gain slightly next year, unless government restrictions hold it back.

Telephone construction is tapering—it dropped from $706 million in 1948 to $527 million last year. But the railroads have been doing a minimum of construction work. Faced with mobilization demands, their construction work—$352 million last year—is likely to go up.

With a marked gain in prospect for electric utilities, however, public utility construction as a whole is likely to increase next year. The great bulk of utility projects probably will have priorities so their dollar volume is likely to climb.

Beauty that's more than Skin Deep

BUILT WITH

UNI-FORMS

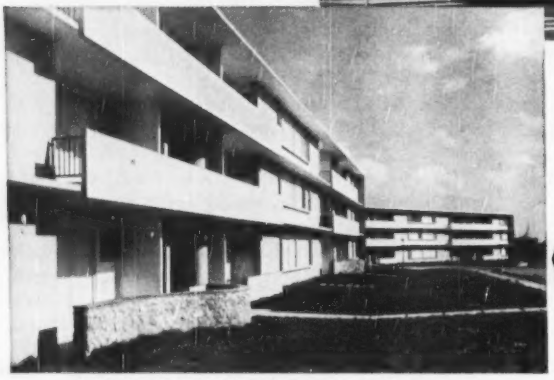
TO BE

Fireproof
Stormproof
Vermin Proof

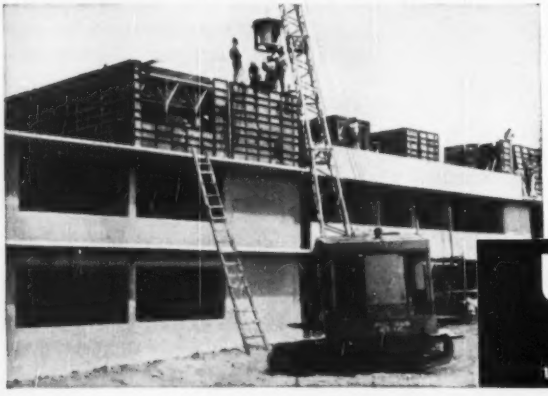
AND

PERMANENT!

CARIBE HILTON HOTEL, San Juan, Puerto Rico
ARCHITECTS: Toro, Ferrer & Torregosa CONTRACTOR: Geo. A. Fuller Co.



UNIVERSITY OF PUERTO RICO FACULTY APARTMENTS, Rio Piedras, Puerto Rico
ARCHITECT: Henry Klumb • CONTRACTOR: Jorge Rosso



UNI-FORMS ARE "GOOD BUSINESS" FOR ALL THREE:

CONTRACTOR: UNI-FORMS give the builder speed . . . economy . . . production line efficiency . . . maximum utility . . . they're ready to use . . . require 1/3 as much alignment and bracing as conventional forms . . . save TIME, LABOR AND MATERIALS...are permanent equipment for long-time use.

ARCHITECT: UNI-FORMS are versatile . . . flexible . . . they can form anything . . . permit widest latitude in design . . . always assure beautiful, easy to finish concrete.

OWNER: UNI-FORMS build safer structures . . . resistant to fire, storm, wind and explosion . . . assure permanency . . . beauty . . . lowest initial cost . . . lowest annual maintenance cost . . . lowest insurance cost.

UNIVERSAL
Form Clamp Company
Founded 1912
1238 N. KOSTNER • CHICAGO 51, ILL.

The Road Work Ahead

FEDERAL-AID highway and street work can go forward on an expanded program during the fiscal years of 1952 and 1953 under the compromise legislation finally agreed to by Congress (ENR Sept. 7, p23). The amount of normal federal-aid money has been increased by $50,000,000 over that previously authorized for the years 1949-51, bringing the total to $500,000,000 for both 1952 and 1953. This increase is badly needed, and those who succeeded in getting it in the face of a misguided belief that the authorization should be cut to aid the defense program are to be congratulated for their persistence. Nothing could hamper the defense effort much more than the congestion growing out of inadequate highways.

A new departure in this latest federal-aid highway legislation is authorization for states and cities to use future federal-aid funds to retire bonds issued now to finance badly needed construction. This should be especially useful to cities faced with the problem of financing freeways through built-up areas. The cost per mile of such work is so high that many cities are finding it difficult to raise money to build them. Even matching the annual federal-aid allotments is not easy, and building at a rate based on using these allotments as they come along often is too slow.

Now that future federal aid funds can be used to pay interest and amortization charges on bonds, large undertakings can be completely financed before they are started. Then they can be built as expeditiously as conditions permit. How much work this will add to the normal highway program for the next few years cannot be estimated at this time, but it is a factor favorable to stepped-up progress.

Developing the Delaware

INTEGRATED river basin development appeared in a new and altogether welcome and promising form last week with the proposal to set up a four-state water authority for the Delaware River. In contrast to TVA, and the Missouri and Columbia River projects, the federal government is not a party to the Delaware River plan. Also unlike these earlier precedents in basin development, hydro power is not the dominant factor. More and better drinking water for New York City and Philadelphia, as well as other communities in New Jersey, Pennsylvania, New York and Delaware, is the primary goal (ENR Feb. 2, 1950, p. 25). Additionally there would be included about 30,000 hp of installed turbines, pollution abatement through controlled low-water flow, water for industry and protection of oyster beds from too-high salt content in the water. It is a true multi-purpose development.

To say that something new appeared last week is, of course, gross over-simplification. The idea that jelled then into a definite proposal to form an authority-type organization to finance, construct and operate dams, reservoirs, aqueducts and power plants dates from 1936. That was when the Interstate Commission on the Delaware River Basin (Incodel) was formed. In the ensuing years it has worked hard and conscientiously, always with competent engineering advice, to develop a plan that was sound technically and practical politically. Such a plan was proposed last week (see p. 25).

Incodel's next task is to secure approval of its plan by the legislatures of the four states and by Congress. In this endeavor it deserves widespread help and encouragement. Greater utilization of state compact machinery in developing national resources is much to be desired. Implementing such compacts by authority-type organizations, as proposed by Incodel, is a further step in the right direction.

One of the basic tenets of a sound and progressive national policy on water resources is to encourage local responsibility and control. The Incodel plan follows this pattern—adding the further advantage of private investment financing in place of using tax money. A great opportunity will be lost if the plan is not quickly approved.

Politics Pays Boston Badly

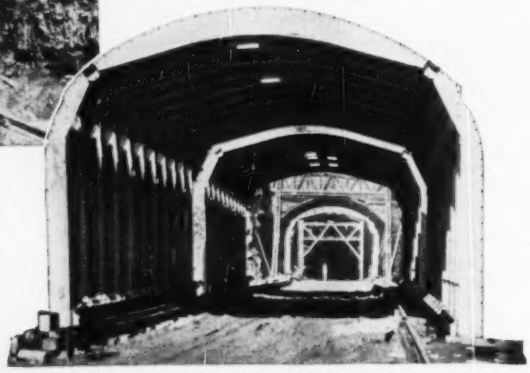
RESIGNATION of the three top engineers in the construction division of Boston's Metropolitan District Commission in protest over political interference is a hopeful sign. It brings an unsavory situation into the open where Boston citizens can weigh it against their consciences and pocketbooks. It is a reminder to other cities that their public works linen may be no cleaner than Boston's. And it puts the spotlight on three engineers who had the courage to stand up for honest, efficient public service. Their political bosses charge them with being "impetuous" in resigning. Good synonyms for impetuous are furious and passionate—and that the engineers can be proud of. If the commissioners used impetuous for "hasty," one can ask, hasty for what? Perhaps too hasty to afford time to prepare an answer to the charge that the payroll was padded with unnecessary, but politically acceptable, employees.

Until this charge is proved false or the condition, if it exists, changed, Boston is not going to get its money's worth from public works expenditures. And a good many other cities could take a bite out of the same apple. Paying political debts with public works dollars is not confined to Boston.

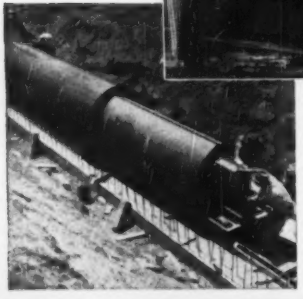
BLAW-KNOX steel forms

save one costly concreting operation on a BIG TUNNEL JOB

Original specifications on this big tunnel concreting job called for four operations . . . pouring side walls, placing arched roof, then the ceiling slab, and the floor. Collaborating with the contractor, Blaw-Knox engineers demonstrated how Blaw-Knox collapsible Steel Forms could be combined to permit concreting of side walls and roof arch in one operation. One step in construction was saved, and the necessity of using an expensive copper water stop between the wall and the arched roof was eliminated. The time saved expedited completion of the job. A daily concreting progress of 50 ft. was obtained by telescoping 50 ft. units of combined side wall and arch forms. Such Blaw-Knox consultation service in planning profit-making construction jobs as early as the blueprint stage is available to any contractor without obligation.



Right—Typical of the wide variety of jobs on which Blaw-Knox Steel Forms are used, this super highway viaduct was built with three sets of Blaw-Knox steel centering which carry the forms for the arch ribs.



Left—Blaw-Knox Steel Forms speed construction of a small sewer. Some of the recent typical jobs where Blaw-Knox forms and engineering service were used include: Brooklyn-Battery Tunnel, West Rock Tunnel (New Haven), Bull Shoals Dam, Delaware Memorial Bridge, Squirrel Hill Tunnel, Parkersburg Floodwall and many others.

TOUGH, UNUSUAL PROBLEMS SOLVED BY BLAW-KNOX ENGINEERING

EXPERIENCE As the original and most prominent manufacturer of Steel Forms for heavy construction, Blaw-Knox has been called upon to solve many tough and unusual concreting problems. The experience gained over 40 years has resulted in an engineering service unequalled for helping you obtain the most efficient forms for your particular job plus simplified forming methods that save time and money. Whatever your concreting problems, from tunnels to building big dams or bridges, to pouring small sewers or foundations, Blaw-Knox engineering skill and experience is at your service. Write today for advice or information, or ask for Bulletin 2035.

BLAW-KNOX

BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.

New York • Chicago • Philadelphia • Birmingham • Washington

ENGINEERING NEWS-RECORD

SEPTEMBER 21, 1950 VOL. 145 NO. 12

Budget cuts for construction hit U. S. work and local plans

Federal agencies announce civil construction curtailment figures assigned by Budget Bureau; state and local advance planning to be stopped

Federal construction cutbacks required under the Omnibus Appropriation Act will not in themselves cause drastic curtailment of the civil works program in the current fiscal year. Actual cash reductions totaling about $175 million were called for last week in directives to government agencies by the Budget Bureau.

Cuts ordered in construction expenditures included these minimum reductions:

$50,000,000 for Army civil functions; $45,000,000 for the Reclamation Bureau; $20,000,000 for other Interior Department agencies; and $23,000,000 for the Bureau of Public Roads. Other government agencies were assigned reductions that would lop another $15,000,000 to $20,000,000 off the year's construction outlay.

Cuts in contract and loan authorizations ordered by the Budget Bureau can affect an even larger volume of construction. Contract authority is to be reduced by $75,000,000 for the federal-aid hospital program of the Public Health Service and $15,000,000 for the airport aid program of the Civil Aeronautics Administration. The Agriculture Department was instructed to curtail loan authorizations by $100 million; most of that cut will have to come out of $350 million for rural electrification and $32.5 million for rural telephone lines, authorized in the act.

• **Advance planning frozen**—Most drastic of the Budget Bureau directives affecting future construction was an order stopping the loan program for advance planning to state and local public works. In the opinion of the people who have been directing the loan operation, the program is temporarily frozen. They foresee its revival as soon as need develops for planning of local facilities oriented to national defense requirements.

For the present, the advance planning program has ceased operating. All the money allotted to it by Congress—$47,000,000 in the 1951 bill—is impounded. So far, the community facilities service has approved advance planning loans totaling nearly $20,000,000 out of last year's $25,000,000 total of cash and contract authority.

An economy rider in the omnibus bill compelled the executive branch—through the Budget Bureau—to order the cuts. The rider directed that nondefense appropriations and authorizations in the $36-billion measure be reduced $550-million. President Truman criticized Congress for buck-passing its own money-matter responsibility to the executive, but he signed the long-delayed money bill anyway.

• **Construction takes heavy share**—Construction programs were bound to bear a heavy share of the reduction. Most of the $36-billion appropriation was earmarked for defense and fixed expenditures of the government—service on the national debt, for example. New investment undertakings, such as civil works, offer one of the few areas in which cuts can be made without impairing normal government functions.

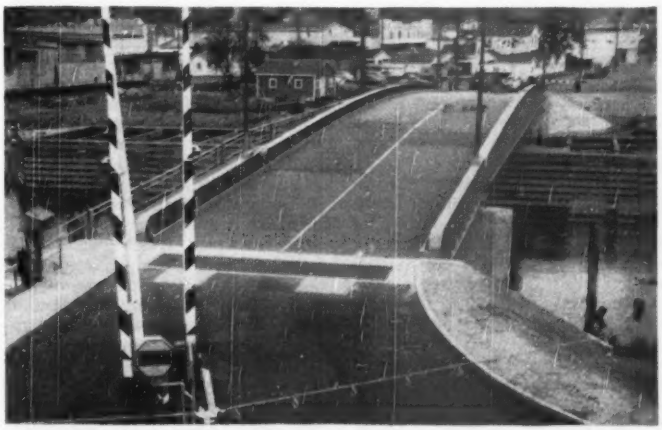
• **Corps of Engineers**—According to the Corps of Engineers, the reduction ordered for civil functions will mean a $50,000,000 cut in flood control and rivers and harbors. The Army Engineers already had put in effect a curtailment program (ENR Aug. 31, p 24) that would hold expenditures down to the $440-million for flood control construction and $120-million for rivers and harbors voted by Congress in the one-package money bill.

An additional cut of about 9 percent now must be made in the Army's civil functions program for the year. The criteria already in use will be applied more intensively to effect the added slash.

• **Reclamation** – Reclamation's construction budget has to take a deeper percentage cut. Congress, however, gave the bureau practically everything it asked for in voting $296-million of construction money. This sum will have to be cut 15 percent to achieve the $45,000,000 saving ordered for the bureau. Most of the reductions will be exacted from irrigation projects, on the basis of criteria already established (ENR Aug. 24, p 23).

• **Hospitals**—By cutting $75,000,000 off the contract authority figure for federal aid to local hospitals, the Budget Bureau halved the program and

(Continued on page 24)



HYDRAULIC SWING SPAN, ABERDEEN, WASH.—Believed the first of its kind, this $375,000 swing bridge across the Wishkah river operates by hydraulic power rather than by the conventional bull gear. The 190-ft span can be opened in 60 seconds, half the time estimated for bull-gear mechanism.

Budget cuts . . .

(*Continued from page 23*)

reduced it to its former level of $75,000,000 a year.

Before the Korean war, Congress had amended the Federal-Aid Hospital Act to double the annual authorization and permit federal participation above 33⅓ percent and up to 66⅔ percent, in any ratio between those figures elected by a state and approved by PHS.

Because of the greater share of cost borne by the federal government, the $75,000,000 now allowed will not produce as much new hospital construction as under the former 33⅓-66⅔ arrangement.

• **Airports**—A slice of the $550-million saving decreed by Congress is to come out of the Federal-Aid Airport Program.

The CAA has been instructed to cancel $15,000,000 of its $36,700,000 in contract authority for airports. That cut means a further slowdown in a program that never has had enough money to make the progress anticipated since it got under way in 1947.

No cuts could be ordered in cash appropriations for either the hospital or airport aid programs. Practically all the 1951 money Congress voted for the two operations already is committed to pay bills that will come due this fiscal year on contracts assumed under authority given in the past. The cash appropriations are $100 million for hospitals and $37,000,000 for airports.

• **Highways**—On the federal highway program, the Budget Bureau felt that it had a little more leeway. It directed the Bureau of Public Roads to reduce cash expenditures $23,000,000 below the sums awarded in the omnibus money bill. Nearly all the saving will have to come out of two appropriations: $385 million for federal aid to the states and $22,500,000 for forest highways.

Actually, the proposed cut is pretty much out of the power of the federal government. It is really an estimate based on two main hopes: (1) That the states will defer award of contracts for projects that do not contribute to national defense, even though the jobs already have been approved for construction by the Bureau of Public Roads and (2) That federal-aid payments to the states will be slowed down to the extent of $15,000,000 to $20,000,000 partly as a result of contract postponements, but more importantly because of other conditions that will delay construction and completion of work.

For projects: An extra 700 million

More than $700 million of construction money is carried in the $17-billion supplemental appropriation bill reported to Congress for final passage early this week.

Most of the construction items in the final bill had been previously approved by both the House and the Senate.

Only one or two of those added by the Senate to the original House bill met strong opposition in the conference committee that reconciled differences between the House and Senate versions.

The two houses already were in agreement on the biggest construction appropriations: $260 million for the Atomic Energy Commission and more than $340-million for military public works. Of the latter money, the Army gets $85,000,000; the Navy, $86,000,000; and the Air Force, $170 million.

The conferees also approved a Senate addition for the Air Force of $25,000,000 cash and $32,500,000 contract authority to speed work on the Air Engineering Development Center at Tullahoma, Tenn.

Two other Senate additions that gained conference approval were $28,500,000 to the Tennessee Valley Authority for power plant construction, and $13,000,000 granted out of $24,500,000 cash (plus $25,000,000 in contract authority) for school surveys and construction in districts where federal activities have increased the number of pupils. Authorization for the school money was passed by Congress last week. The conference dropped a $24,500,000 Senate proposal for a hoof and mouth disease laboratory.

• **Chief Joseph goes ahead**—House conferees blocked a Senate item involving $4,000,000 to start the Ice Harbor hydroelectric project on the Snake River in Washington; the conference assigned the $4,000,000 to speeding McNary and Chief Joseph Dams instead. The House previously had refused funds for Ice Harbor Lock and Dam because of uncertain effect on salmon fisheries, despite President Truman's request for money to begin the job. Both houses had approved his request of $2,900,000 to start the Albeni Falls project in Idaho.

Other construction funds added by the Senate won agreement of the House conferees. They included—besides the larger ones already mentioned—$3,000,000 for the Baltimore-Washington Parkway, $2,150,000 to buy land for a second Washington airport, $7,500,000 for Alaska roads, and $1,900,000 for the Bureau of Standards to convert the Corona, Calif., military hospital into a guided missiles laboratory. The last item is subject to release of the hospital by the Defense Department.

There was no disagreement on a number of other contruction appropriations, contained in both versions of the bill. Among these items were $2,500,000 for Panama Canal housing, $1,500,000 for the Alaska Railroad, $1,100,000 for the Reclamation Bureau, and $6,000,000 for the Flood Control Emergency Fund of the Corps of Engineers.

D. C. gets license law; all U. S. now covered

The District of Columbia soon will catch up with the rest of the country on licensing of professional engineers. Congress last week completed action on a registration bill and sent it to the White House for signing. The bill was expected to become law this week. It goes into effect 90 days after enactment.

According to the bill, the district commissioners will appoint a five-man registration board. The board is at all times to include one representative for each of the civil, chemical, electrical and mechanical engineering branches.

A "grandfather" clause—good for one year—is included in the bill. Engineers who have resided in the District of Columbia or practiced there for a year prior to enactment of the law may apply for registration and obtain a certificate upon presenting evidence of experience satisfactory to the board.

The bill also provides for registration of engineers licensed by states or territories having equivalent requirements.

A heavy flood of applications is expected during the first year, before the "grandfather" provision expires. Vast numbers of federal government engineers working in and around the district have been awaiting the opportunity to register.

Enactment of the District of Columbia law will bring the last bit of U. S. territory into the engineer registration fold. Licensing laws are in effect for Alaska, Hawaii and Puerto Rico, as well as for the 48 states. In Montana, however, the law applies only to civil engineers and in Massachusetts and New Hampshire, registration is optional.

Incodel OK's basin plan, asks 4-state authority

Incodel (The Interstate Commission on the Delaware River Basin) has accepted in principle the plan proposed by its consulting engineers for four-state development of basin water resources (ENR Feb. 2, p 25).

The annual meeting of the interstate agency at Shawnee-on-Delaware, Pa., last week voted to submit the plan to legislatures of New York, New Jersey, Pennsylvania and Delaware with the recommendation that an interstate authority immediately be set up to plan, finance, build and operate the proposed water supply system. (Congressional approval also will be needed.)

Some 200 delegates to the 2-day meeting heard the merits of the $800 million plan (ultimate cost) expounded by members of Incodel and by Malcolm Pirnie, representing consultants to the commission, Malcolm Pirnie Engineers, New York, and Albright & Friel, Inc., Philadelphia.

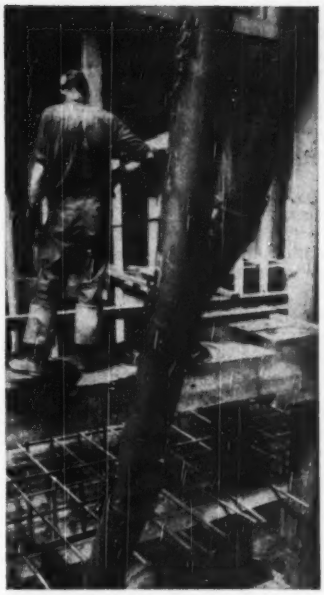
Those present also heard much said about federal water policy—most of it uncomplimentary. James H. Allen, Incodel executive secretary, asked federal agencies to "stop competing wastefully with local and state projects" and insisted states should have the right to determine their own programs. A panel of speakers called on Congress to pass a national conservation law under which projects could be initiated and completed by basin states, with federal assistance only as requested.

The proposed Incodel system of dams would supply 20,000,000 people in the four basin states with water up to the year 2000. The first phase of construction would cost $550 million, supply 465 mgd to New York City and northern New Jersey and take 12 years to complete. Phase 2, $250 million worth, would be built when needed to supply Philadelphia and lower Delaware River cities.

Claims finally settled for D. C. building collapse

Final settlement of the remaining litigations growing out of the Dec. 1947, collapse of the Empire Building in Washington, D. C. (ENR Dec. 25, 1947, page 41) has been made.

Last January suits for $1,250,000 damages were settled in District Court for $50,000. This released the claim of 37 persons who sued as a result of the collapse in which four persons died. The wreck of the building has remained undisturbed for almost three years, while damage litigation was in the courts.



MONEY STARTS TO COME IN—There's an old saying that you're not making money until you start pouring concrete. Well, they started making money on the New Jersey Turnpike's Passaic River bridge the other day. These chutes are directing first concrete into one of the bridge's main-pier cofferdams.

Sewage effluent water put to industrial use

Water from sewage treatment plant effluent will be put to industrial use when the Southern California Edison Co. constructs a new steam plant southeast of Los Angeles.

Although admitting a recent purchase of 124 acres on Alhambra wash near Whittier Narrows was for steam generating facilities, company officials refused to reveal the size of the plant or their plans for start of construction.

Daily requirement for the plant will be 8,000,000 gal.

Another use of effluent by industry is under consideration in Southern California. The Standard Oil Company of California has been negotiating for some time with Los Angeles officials for Hyperion plant discharge for use in a nearby refinery. Although these discussions never went beyond the investigation stage, it is believed some definite action on the proposal may be taken soon because of the recent start of operation of the Hyperion plant. Such a project probably would require that further plants be built at Standard Oil expense.

Maumee Conservancy District assured

Railroads now favor plan; dissenting counties will not appeal lower-court decision.

Establishment of a Maumee Valley Conservancy District in Northwestern Ohio is assured, now that objectors—three of the 15 counties involved—have decided not to carry their cause to the Ohio Supreme Court. Seven railroads, which operate in the district, originally had joined opponents in attempting to block the organization, but they did an about-face at the urging of the Nickel Plate RR. and now are backing the project.

The railroads consider the conservancy project vital in providing industrial water supplies in the 15 Ohio counties lying within the watershed of the Maumee River, which runs from Fort Wayne, Ind., to Lake Erie at Toledo, O.

Three district directors (who were nominated Sept. 5) are expected to hire an engineering firm to prepare a plan for dams and other methods of impounding water and regulating its flow in the Maumee and tributary rivers. The estimated $100,000 cost of the engineering survey is expected to be paid by a one-tenth-mill levy on real estate in the area affected by the project.

• **Purpose of the District**—When completed, the conservation program is expected to supply additional water for both domestic and industrial purposes, reduce soil erosion, provide effective flood control, and make available new recreational facilities.

The district passed its first court test when a court of appeals decision supported the action of the conservancy court in setting up the district.

The conservancy court consists of one representative from each of the 15 counties. Chief opposition, since the railroads changed sides, comes from the county commissioners of Van Wert, Hancock and Harding counties, in the southern part of the district. This group, plans to set up a "watchdog committee."

Pumping plant blast cuts sewerage service

An accumulation of gasoline and kerosene in sewer lines is believed to have caused a pumping-plant blast that resulted in interruption of sanitary sewage facilities for 2,500 residents of Russell's Point and Orchard Island, in Ohio. The blast, which occurred in a wet well containing two pumps, blew off the well building's roof.

Contractors say they should control work

A.G.C. members ready, willing and able to handle mobilization; believe normal bidding best at home

H. W. Richardson
Editor, Construction Methods

Pointing to their record of construction achievement in World War II, the Associated General Contractors of America in session at their fall meeting in Chattanooga last week declared they are ready, willing and able to handle all construction required for general mobilization or emergency defense measures. They insist, however, that for most effective use of construction resources all equipment, manpower and control of job operations should remain in the hands of the contractors.

They also recommend that, except for top secret projects and those that must be rushed before complete plans are available, all military construction in the continental United States be awarded on a normal competitive bid basis. The contractors believe there is sufficient construction organization, manpower, equipment and materials available to handle any and all military construction requirements in the immediate future, at least.

President Walter L. Couse pledged the AGC to the mobilization effort declaring that the association members will do whatever is required of them, and that all construction for defense will be carried to completion with all dispatch.

The three-day meeting of AGC governing and advisory boards, which also included secretaries and managers of the 112 chapters and branches, was strictly an association affair with no outside speakers. While principally concerned with possible defense, military and emergency construction, the 350 delegates also transacted a lot of routine and association business at the meeting.

• **Members report conditions**—Results of a recent survey among the 5,600 members as to current construction conditions were announced. The concensus is that increased shortages of materials, machinery and skilled workers have developed during the past two months as the construction industry has hit the peak of operations in the year of the greatest construction volume in history. As scarcities of building materials and machinery have developed, cites the survey, price increases have been general, with the sharpest rises for lumber. There has been pressure for increases in wage rates, too. Contractors expect a continued large volume of work for the remainder of the year.

In his mid-year report to the meeting, Managing Director H. E. Foreman discussed the impact of construction by the Korean conflict. He said the full impact of the mobilization program has not yet been felt, and manpower and materials shortages may be intensified. Yet, he believes, the immediate amount of defense construction will not be a significant percentage of the total volume. He stated that an important part of AGC work in the future will be to consult with government agencies administering the controls to present information of assistance in determining how the controls should be applied. After considerable debate on the floor a call for immediate all-out control of prices and wages was modified to a demand that industry and government do everything possible to prevent further inflation.

T-H secondary boycott ban hits snag

Joseph Gambatese
(McGraw-Hill Washington Bureau)

Serious doubt has been cast on the ability of Taft-Hartley's secondary boycott ban to stop a common tactic of building trades unions on construction projects.

In a unanimous decision, the U. S. Court of Appeals in Washington, D. C., has just ruled: It is not a secondary boycott when union men strike to keep non-union employees of a subcontractor off the job.

This decision conflicts sharply with at least three others in other appeals courts. All four are headed for the Supreme Court for clarification as to just what the law means in this type of situation.

Here is the problem:

Roughly, the law's secondary boycott section makes it an unfair labor practice for a union to strike, or urge others to quit work, if the purpose is to force any employer to stop doing business with another.

• **Subcontractor used non-union men**—In the case just decided, the Denver Building Trades Council and the AFL electricians and plumbers locals picketed a struck job of Doose & Lintner Const. Co. in January, 1948. They picketed the job as "unfair" because of non-union men brought on the job by an electrical subcontractor, Gould & Preisner.

Doose & Lintner charged the union with committing a secondary boycott. NLRB General Counsel Robert N. Denham's office issued a complaint against the council and local unions. As required by Taft-Hartley in secondary boycotts, an injunction was sought. The Federal District Court refused the injunction on the ground that the construction job was purely local and not subject to the jurisdiction of the law. After two weeks, the non-union workers were replaced with union men and the dispute was ended.

Meanwhile, the secondary boycott unfair labor practice charge was prosecuted through NLRB. The board decided (1) That it had jurisdiction, (2) that the lower court's rejection of jurisdiction as to the injunction had no bearing on the board's right to prosecute the unfair labor practice, and (3) that the labor organizations were guilty of committing a secondary boycott.

The court of appeals split 2-1 in upholding NLRB on the first two parts of the decision, but was unanimous in its opinion that the unions had not violated the secondary boycott section of the T-H law.

• **Contractor not a neutral**—The court reasoned that this was a clear case of "primary" action rather than a secondary boycott for several reasons: Doose & Lintner was not a "neutral" because it had a part in creating the non-union condition by dealing with non-union electrical contractors.

The union men did not refuse to work for Doose & Lintner on other jobs, nor did they want them to stop doing business with the electrical contractors. They just did not want to work with non-union men. The picketing was at the site of the complaining contractor. He cannot separate himself from the non-union conditions created on the job so as to make the unions' action against him "secondary."

The Doose & Lintner decision conflicts most sharply with the views of the circuit court in New York in the Samuel Langer case. The AFL-IBEW was found guilty by both NLRB and the court of committing a secondary boycott in picketing a building contractor in order to force him to stop doing business with Langer, who is a non-union electrical subcontractor.

Referring to this decision, the court in the Doose & Lintner case points out that the New York court treated the building contractor as a "neutral." It didn't think Doose & Lintner was neutral.

CONSTRUCTION BUSINESS

Industrial building headed for new record

Spending by industry and business for plant and equipment in the third quarter this year is estimated to be 12 to 13% higher than in the second quarter and is expected to hold at almost this rate in the fourth quarter. This tops the 1948 highs in manufacturing and some other branches of business according to a joint survey made by the Securities and Exchange Commission and the Commerce Department.

Contracts awarded for industrial and utility plants so far this year are running 34% ahead of last year reported by ENGINEERING NEWS-RECORD through mid-September. These topped $1,015 million for the 37-week period. This compares with previous full-year records of $1,113 million in 1946 and $1,096 million in 1948. It does not include commercial building or the record volume of private investment this year in pipelines and other gas and electric transmission systems. Nor does it include private unclassified construction.

To illustrate how industrial building has gained momentum during the year, volume was running 3% ahead of 1949 in the first quarter, 15% ahead at the end of the half, and now is 34% higher for the year up to the present date.

Besides this record rate of starting new construction, the proposed construction backlog has increased by $343.7 million this year to a new high reserve of potential construction totaling $4,766 million in industrial and utility building projects in the planning stage.

Non-commercial aggregate production increases

The recent marked trend toward more job-produced sand and gravel continued in 1949.

Final figures just in from the Bureau of Mines show that total commercial production of sand and gravel went down 1% in 1949 to 231 million short tons from 233.5 million in 1948.

But government and contractor-produced sand and gravel went up 2½% to 87.9 million short tons in 1949. This non-commercial aggregate was 28% of all aggregate produced in 1949 against 27% in 1948. Non-commercial gravel is 39% of all gravel produced in 1949, 38% in 1948. Non-commercial sand is 8½% of the total in 1949, 7½% in 1948.

"Paving" took most of the contractor-government produced aggregate, 96% of the gravel in 1949, 82% of the sand. Building took 4% of the gravel, 18% of the sand.

Of the commercially produced gravel in 1949, 49% was for "paving," 40.5% for building and the rest for railroad ballast and other uses.

Cement price rises

Cement shortages, record demand, shipping bottlenecks, strike shutdowns, and new labor agreements that increase costs have plagued cement producers this summer. These are now being topped off with some price rises.

Effective September 1 price increases include:

- **Denver,** up 20 cents a bbl to $3.74 in paper, $3.40 in bulk, fob city, carload lots.
- **St. Louis,** up 20 cents a bbl to $4 per bbl delivered to job, and $3.14-$3.25 in paper, $2.89-$2.95 in bulk in carload lots fob city.
- **Kansas City,** up 12 cents a bbl in paper to $3.25 and 10 cents a bbl for bulk to $2.98 for carload shipments fob city.

To be effective October 1:

- **Eastern producers**, increases of 10 cents a bbl for bulk cement and 12 cents in paper bags have been posted for October 1 by Alpha, Lawrence, Lehigh and Penn Dixie. Universal-Atlas is holding tight for the time being.

Cost indexes all rising

New building cost index values are all higher. Those recently reported include:

- **Smith, Hinchman & Grylss,** building cost index for August is 237, up 2.7% from July, 1926 = 100. This is sharpest rise since 1946. Lumber and plywood gave it the biggest boost.
- **Boeckh,** national average all types of commercial and factory buildings is 221.0 for July, up 1% from June, 1926-29 = 100. For brick and concrete commercial and factory buildings in New York City index is 252.6 for July, up 2.5% from June.
- **American Appraisal Co.,** national average building cost index for July is 502, up 0.8% from June, 1913 = 100.
- **Associated General Contractors** building cost index is 366 for August, up 3% from July, 1913 = 100.
- **Wholesale price index** for building materials climbed to 218.2 for the week ending Sept. 5. This is up 2.55% for the month as reported by the Bureau of Labor Statistics, 1926 = 100.

Railroad cost indexes

The 1949 volume of the railroad road construction and equipment cost indexes have recently been released by the Engineering Section, Bureau of Valuation, Interstate Commerce Commission. Road construction cost is down in 1949 to 270 from 271 in 1948 on the overall weighted average, but most individual accounts are higher in 1949 than for 1948. Grading took the big drop, 20 points to 139, a decline in cost of 26%. Equipment cost increased 7 points, or 2%, to 330 for the overall average. These values are based on 1910-14 as 100.

The cost trends for the year are shown by individual accounts in the accompanying table.

RR construction cost indexes (1910-14 = 100)

Regions I—VIII	1948	1949
ROAD construction	271	270
Equipment	323	330
General	272	272
All—Wtd. Aver.	281	282
ROAD: By accounts	**1948**	**1949**
Engineering	271	270
Other R-O-W Expend.	261	258
Grading	159	139
Tunnels & Subways	337	339
Bridges, Trestles & Culv.	367	374
Elevated Structures	377	382
Ties	298	302
Rails	244	245
Other Track Matl.	266	278
Ballast	235	254
Tracklaying & Surf.	366	366
Fences, Snowsheds & Signs	271	279
Station & Office Bldgs.	364	368
Roadway Buildings	380	386
Water Stations	325	327
Fuel Stations	357	357
Shops and Engine Houses	372	379
Grain Elevators	367	367
Storage Warehouses	369	377
Wharves and Docks	346	350
Coal and Ore Wharves	338	341
Tele. & Teleph. Lines	251	250
Signals & Interlockers	219	226
Power Plants	375	386
Power Transm. Systems	258	266
Misc. Structures	372	378
Roadway Machines	267	270
Roadway Small Tools	310	315
Public Impr.-Constr.	316	321
Shop Machinery	319	324
Power Plant Machinery	240	242
Work Equip.	338	348

Public housing unit value higher than private

The average value of urban dwelling units authorized in June, 1950 is $7,390, up 12% from June 1949 as reported by the Bureau of Labor Statistics. The ENR Building Cost Index went up 7% in this same period.

But publicly-financed dwelling units averaged $9,760 in June, 1940. This is 14% above their average for June 1949. It is also 65% above the average valuation reported for privately built multi-family dwelling units and 26% higher than the average 1-family house authorized in June.

The accompanying table shows the average unit valuation by types:

Aver unit valuation

Urban dwelling units	1950 June	1950 May	1949 June	Incr June '49-'50
All classes	$7,390	$7,311	$6,576	+12 %
1-family	7,745	7,708	6,957	+11 %
2-family	5,552	5,182	4,949	+12.5%
multi-family	5,925	5,791	5,516	+ 7 %
Publ financed	9,760	8,566	8,546	+14 %

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 81, went to press.)

Dam and Power Plant—Construction of a $40,000,000 dam and power house is proposed by the Washington Water Power Company of Spokane, Wash., on Clark Fork River, at Cabinet Gorge, Washington.

Office—Simon Brothers, New York, N. Y. will construct 23-story office building in New York by own forces. Estimated cost is $9,000,000. Kahn & Jacobs, New York, N. Y. are architects.

Factory—Frigidare Products of Canada, Ltd., Toronto, Ont. awarded contract for substructure of $7,000,000 factory at Toronto, to Redfern Construction Co., Leaside, Ont. Structural steel has been awarded. A. G. Facey, Toronto, is architect. R. P. Allsop and H. H. Angus & Associates, are engineers.

Housing—F. H. McGraw Co., Hartford, Conn. was low bidder at $6,863,661 for constructing housing project at Hartford, Conn., when Hartford Housing Authority, opened bids September 11. Kane & Fairchild, Hartford, are architects. Henri B. Von Zelm, Hartford, is engineer.

Turnpike—$6,581,634 contract has been awarded to Construction Aggregates Corp. and Peter Kiewit Sons Corp., New York, N. Y. for constructing contract 22, New Jersey Turnpike, in Essex County by the New Jersey Turnpike Authority, Trenton. Construction includes bridges over railroad and interchange ramps. Edwards & Kelcey, Frederic C Harris, Inc. and O. J. Porter & Comn, Newark, N. J., are consulting engineers.

Housing—Grove, Shepherd, Wilson & Kruge, New York, N. Y. were low bidders at $7,550,000 on general contract for South Housing Project, in Louisville, Ky. at Municipal Housing Commission—letting September 12. The total bids, including mechanical contracts was $9,382,811 against an estimated cost of $7,600,000 for entire project. Additional funds will be sought when bids are submitted to FHA. Fred Hartstein, and Louis & Henry, Louisville, are architects. E. R. Ronald & Associates, Louisville, are engineers.

Crude Oil Distillation Plant—Arthur G. McKee & Co., Cleveland, O., will build $5,500,000 crude oil distillation plant at No. 1 Refinery, Cleveland, O. to increase output of asphalt, jet fuel and high octane gasoline by Standard Oil Company of Ohio. Work is scheduled for completion November 1951.

Cooperative Apartment—Paul Tishman Construction Co., New York, N. Y. has signed contract to erect seven apartments at Flushing, N. Y. for Local 3, International Brotherhood of Electrical Workers, New York, N. Y. This first unit will cost $3,500,000 and is part of proposed $20,000,000 project at this site. The joint industry board, which consists of the union and principal employers of New York City will finance the mortgage from their own funds. Benjamin Braumstein, Flushing, is architect.

Hotel—Intercontinental Hotels Corp. New York, N. Y. has awarded contract to Taylor Construction Co., Miami, Fla. and D. O. F. Construction Comn Maracaibo, Venezuela for a hotel in Maracaibo to cost about $2,000,000. Holabird & Root & Burgee, Chicago Ill. are architects. The owner, affiliate of Pan American Airways, has also announced proposed construction of Pra Kakron Hotel in Bangkok, Thailand, estimated at $2,000,000.

Van Wyck Expressway—Gull Contracting Co., Flushing, N. Y. will build $3,473,519 section of Van Wyck Expressway, including five bridges in Queens County. New York State Superintendent of Public Works, Albany awarded contract.

Office and Warehouse—Foundation Company of Ontario, Toronto, will construct office and warehouse in Toronto at about $4,500,000 for the Liquor Control Board of Canada, Toronto. Mathers & Haldenby, Toronto, are architects.

State Prison—Commonwealth of Massachusetts, Department of Correction, Boston, plans State Prison at Norfolk, Mass. to cost about $3,425,000. Desmond & Lord, Boston, are architects. R. D. Kimball, Boston is engineer.

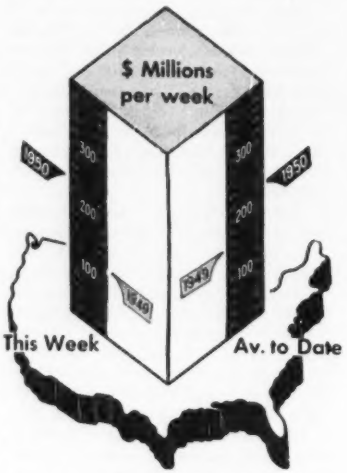
Parking Garage—H. Broderick, Seattle, Wash. plans parking garage in Seattle. Cost will be about $3,500,000. John Graham & Co., Seattle, are architects.

Office—Smith, Hinchman & Grylls, Inc., Detroit, Mich. is preparing preliminary plans for 8-story office building in Lansing, Mich. for Building Department, State of Michigan, Lansing. Estimated cost is $4,300,000.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100	1913	1926	1949
Constr. Cost. Sept. '50	530.37	254.95	111.18
Bldg. Cost. . Sept. '50	392.81	212.34	111.66
Volume . . . . Aug. '50	385	169	135



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

Week of Sept. 21 '50	This Week	Cumulative, 38 wks. 1950	1949	% chge
Federal	$8.5	$922.8	$819.3	+13
State & Mun.	86.0	2,700.4	2,373.2	+14
Total Public.	$94.5	$3,623.2	$3,192.5	+13
Total Private	144.4	5,096.4	2,794.7	+82
U. S. Total.	**$238.9**	**$8,719.6**	**$5,987.2**	**+46**

Contracts by type of work

	This Week	Cumulative, 38 wks. 1950	1949	% chge
Waterworks.	4.1	$171.7	$159.8	+7
Sewerage . .	3.7	198.4	194.9	+2
Bridges	16.0	278.8	247.7	+13
Highways . .	28.2	951.1	699.3	+36
Earthwork, Waterways	4.3	321.0	427.3	−25
Buildings:				
Public . . .	26.6	1,207.5	863.4	+40
Housg., pub.	4.6	211.2	299.0	−29
Housg., priv.	53.1	2,610.4	1,204.4	+117
Commercial	22.7	715.9	420.9	+70
Industrial .	61.2	1,676.9	775.5	+39
Unclassified.	14.4	976.7	566.2	+73

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative, 38 wks. 1950	1949	% chge
NON-FEDERAL .	$522.0*	$435.5†	+21
Corporate Securities	1,475.9	1,793.4	−18
State and Mun.: Excl. Housing .	1,621.1	1,504.8	+8
Housing	533.5	593.0	−10
FEDERAL	2,255.7*	1,711.7†	+32
Total Capital	**$6,408.2**	**$6,035.4**	**+6**

* Subject to mandatory cuts. † Includes appropriations not passed until Oct., 1949.

Reduced round trip fare abolished on Pa. Turnpike

Difficulty in processing used tickets has led the Pennsylvania Turnpike Commission, with prior notice to motorists, to abolish its cut-rate round trip fare between present terminals of the 160-mile toll road.

Before this change, drivers of passenger cars paying a $1.50 one-way toll could get a return ticket for 75 cents more. Now the round trip will cost $3.00 instead of $2.25.

Turnpike officials denied that the increased financial returns were a consideration in the revision. They said that the processing of used tickets, done by machines, was becoming more and more difficult on account of torn and otherwise mutilated tickets. Owners seeking refunds on unused return tickets also hampered administrative work, it is claimed.

Less theory, more practice in future N. J. road exams

From now on, prospective New Jersey highway employees will take civil service examinations based less upon general engineering theory and more upon practical subject matter bearing directly upon the job for which the examination is held.

This decision follows conference between Ransford J. Abbott, state highway commissioner and Wm. S. Carpenter, president of the Civil Service Commission.

It was disclosed during the meetings that many of those receiving the highest marks in recent examinations have not been able to perform satisfactorily the jobs for which they were certified.

At the same time it was revealed that many competent engineers with 20 or 25 years of practical experience in the highway department failed to pass the examinations or were too low on the list to receive appointments.

In discussing the reasons for this, Abbott said, "Highway engineering is a highly specialized field. Many of our finest engineers have failed to pass recent general types of examinations simply because they have devoted the major portions of their lives to becoming specialists in one particular line of work.

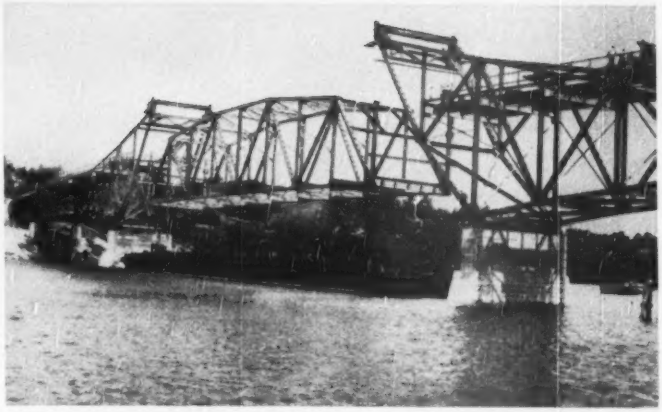
"On the other hand," he continued, "younger men have had a distinct advantage."

BIG JOB STARTS

Construction of the $30,000,000 Central Artery in Boston, Mass. (ENR April 20, page 42) will begin next month.

The first two contracts will be for the construction of a bridge over the Charles River a few feet west of the Warren Avenue bridge. There will be one contract for the superstructure, and another for construction of bridge fenders and piers.

The amount of the two initial contracts will be more than $1,000,000, while the total cost of the first section of the artery will be upwards of $30,000,000.



SUSPENDED SPAN SUSPENDED—Two-hundred foot center truss for Arrowsic Woolwich bridge across Arrowsic River, Maine, rises from barge deck to place. Two-drum hoists on anchor spans raised truss, through eleven-part tackles to hanger members. Hanger members had been bolt-erected to anchors, rigged with tackles then detached and lowered to permanent connection on truss. Tug and lines to piers positioned barge that carried truss. Harris Steel Co., New York, fabricated bridge steel; W. H. Hinman, Inc., North Anson, Me., built the piers. M. L. Wilder is bridge engineer for the Maine Highway Commission, owner.

New Portland expressway to join Columbia highway

"Banfield Expressway" will be the official name of a 14-mi throughway that will connect the business district of Portland, Ore., with the Columbia River highway, main artery from Portland eastward. Construction on the $10,500,000 project is scheduled to start next year.

The name honors T. H. Banfield, Portland industrialist who was chairman of the State Highway Commission from 1943 until his retirement last spring. (Mr. Banfield died Aug. 31.) Present Commission Chairman Ban H. Chandler proposed the designation because Banfield maintained his conviction that the road was necessary in the face of refusal by the voters of Portland to approve a special levy of $750,000 for purchase of right-of-way. At Banfield's urgence the commission voted to go ahead with the project with its own funds, regardless of the city's refusal to share in the expense.

Ohio River toll bridge planned at Lawrenceburg

Plans for a $4,200,000 Ohio River toll bridge at Lawrenceburg, Ind., have been placed before Army Engineers for their approval. Indiana and Kentucky state officials have agreed on the plans for the 1,800-ft structure, which will take 18 months to build. Work may start in November. The bridge will be 32 ft above the 1937 flood crest of 81.5 ft and the center span will be 800 ft long to provide proper clearance for Ohio River ship traffic.

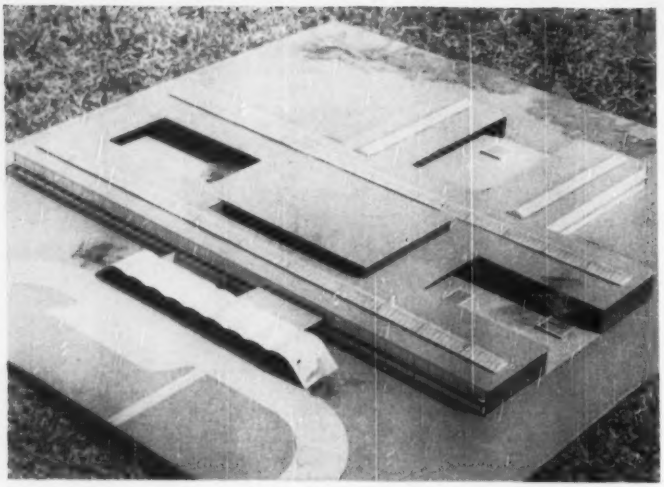
Walter G. Hoch, chairman of the Indiana Toll Bridge Commission, estimates that eight months will be needed to work out the financial details and other preliminaries.

The bridge will be built by Indiana and financed by the sale of revenue bonds to be retired from tolls.

Kentucky officials have agreed to construct an approach from Kentucky Highway 20 to the bridge, and will build about .7 mi of improved highway to link Ky. 20 with the Airport Road in Boone County, Ky.

HIGHWAY BILL SIGNED

On Sept. 7, President Truman signed the highway money authorization bill (ENR, Sept. 7, page 23). This authorizes $500,000,000 a year of federal aid to be apportioned and matched on the same basis as at present.



NEW SCHOOL DESIGN—West Columbia, Tex., school district, will build this 20-room elementary school. Its design calls for a single steel element—lightweight joists and two column struts—to be repeated 126 times. Classrooms will be lighted through screen louvers on the roof. The building is compartmented into walled courts for primary, intermediate and upper grades. It's to cost about $313,600, exclusive of mechanical and electrical contracts. Enclosed area is 30,076 sq ft. Donald Barthelme & Associates is architect.

FNMA transferred to HHFA in reorganization shuffle

The Federal National Mortgage Association has been transferred from the Reconstruction Finance Corp. to the Housing and Home Finance Agency.

The action was taken in accordance with the President's Reorganization Plan No. 22 of 1950, which became effective Sept. 7, 1950.

FNMA is a wholly owned government corporation. Its purpose is to provide a secondary market for home mortgages insured or guaranteed by FHA and VA through the purchase, service and sale of such mortgages. In addition, FNMA is authorized to make direct loans for housing in Alaska.

Under the direction and control of HHFA Administrator Raymond M. Foley, FNMA will continue to be operated as a government corporation with its own officers and a board of directors composed of officers and employees of HHFA and constituent agencies.

New president of the transferred corporation is J. Stanley Baughman, who for the past 17 years has been with the Home Owners' Loan Corporation, the last two years as general manager.

The capital stock of the company, $20,000,000, and $1,000,000 in paid-in surplus, was transferred from the RFC to HHFA. Also transferred were approximately a billion dollars worth of mortgages held by the corporation. (As of July 31, there were 158,142 mortgages amounting to $1,081,449,000.)

Commitments outstanding as of that date covered 102,347 mortgages, amounting to $996,933,000. With a gross authorization of $2,750,000,000, this left, as of July 31, a total of $671,618,000 available for the purchase of additional mortgages.

FHA mortgages down, VA loans up; trend same

Forecasts of future plans from field offices of the government's housing agencies indicate a probable decline in home construction by early fall. The expected drop was reported at the last meeting of the National Housing Council, made up of the heads of all the agencies.

In the first three weeks following imposition of stiffer federal credit terms, applications for FHA mortgages went down, and applications for GI loans went up. The GI increase was attributed partly to the different procedure available to veterans: Applications can be made for VA-guaranteed loans on houses already built or under construction. An FHA application for a new home cannot be accepted after the house has progressed beyond the footings.

FHA applications declined 29% during the three-week period. Excluding military and Alaska housing, which are exempt from credit curbs, the number dropped from 14,227 for the week ending July 28 to 11,076 for the week ending Aug. 18.

GI loan applications were at a higher rate the first two weeks in August than the already high level of July. For the 15-day period ending Aug. 10, applications to the Veterans Administration totaled 34,152, as compared to a monthly total of 59,789 for the 30-day period ending July 25.

Separate-contract dispute halts Chicago plastering

A dispute between Chicago plastering contractors and the lathers' union recently halted nearly all lathing work in the city's metropolitan area and threatened to develop into the city's first major fight in the building industry in 30 years.

The trouble is over a demand of the lathers for separate lathing contracts. For 40 years the plastering contractors have bid for both lathing and plastering and then sublet lathing.

Lathers have served notice on the Employing Plastering Association that, as of Sept. 1, their men would not work for contractors who refused to sign separate contracts for lathing and plastering. About 300 lathers were reported as having walked off their jobs, while the contractors retaliated by dimissing 100 lathers who were still at work.

The "strike" and "lockout" forced the layoff of some plasterers. Other construction mechanics may be affected soon.

A public service

On Sept. 6 a New York contracting firm lashed out at profiteering in a full-page ad in the New York Times. Entitling the ad, "Scare buying is vicious—SCARE SELLING IS WORSE," the Gregory-Roth-Schenker Corp. said that opportunitsic price-raising can establish an inflationary spiral that will let an enemy win economic war—a victory that would be as effective as a military one. Special target of the piece was suppliers who insist on quoting "price on delivery." In the ad, Gregory-Roth-Schenker says that it has $125,000,000 worth of building experience behind it.

Cachuma Dam project wins in California court test

The Santa Barbara County Water Agency has won an important legal decision over a group of Lompoc, Calif., residents who sought to have the agency and the Cachuma Dam Project contracts declared illegal.

A ruling handed down by Judge Charles R. Blackstock, Ventura, Calif., dismissed the suit brought by the seven Lompoc area residents against the agency. The court also overruled demurrers by the same group to the agency's own action seeking to have the master contract and the Santa Barbara city and district subcontracts declared valid.

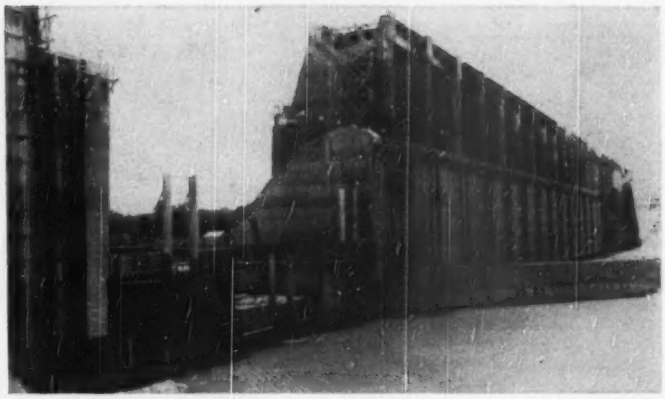
The group had sought to declare illegal master contracts involving them in district liabilities over the $30,000,000 Bureau of Reclamation project. They have claimed that the dam project would not affect them, and that for that reason they did not want to be part of any master agreement between the agency and the bureau.

Meanwhile, the timetable for construction of the dam has been shortened by the Bureau of Reclamation from 1,200 to 900 days, in order to have the reservoir completed and ready to store water by the spring of 1953. The earthfill structure will impound more than 200,000 acre ft. of water.

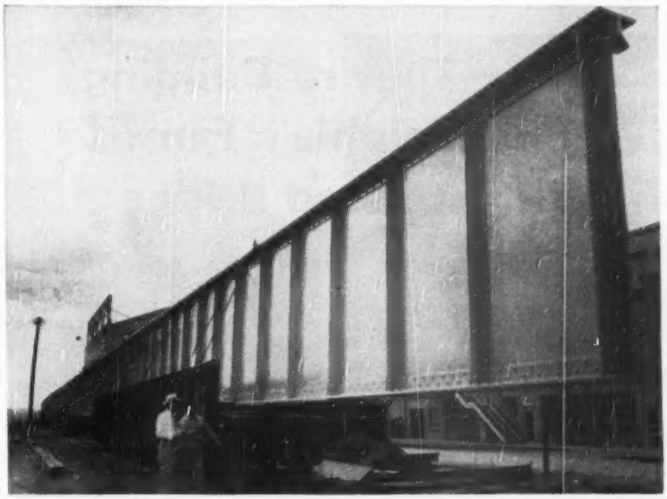
Construction on the dam's 6½-mi Tecolote tunnel is reported well ahead of schedule by project engineers of Halverson Contractors, of Portland, Ore., and Spokane, Wash., which holds the $4,750,455 contract for the job. The tunnel, started early this year, will carry water from the Cachuma Reservoir on the Santa Ynez River through the mountains to the coast.

Also under contract is construction of 9.6 mi of 48-in. diameter concrete conduit, first section of the 28-mi conduit which will run from the south portal of Tecolote tunnel to the south coastal area of Santa Barbara County. American Pipe & Construction Co., Los Angeles, has the $1,582,866 contract. The section is scheduled for completion by summer, 1951.

Cachuma Project manager for the Bureau is E. R. Crocker.



A BRAZOS RIVER DAM—At Whitney dam, on Texas' Brazos river, closure now is proceeding, with construction in this 160-ft gap in the spillway. Streamflow has been diverted through sluiceways in the spillway, which is part of the dam's 19,600-ft overall length. Maximum dam height is 160 ft. (Corps of Engineers photo)



AND A BRAZOS RIVER BRIDGE—Also connected with Whitney dam, these girders will go into a Missouri-Kansas-Texas Railroad bridge whose construction is part of a relocation to make way for Whitney dam's reservoir. Girders are the largest ever fabricated at Virginia Bridge Co.'s Birmingham, Ala., plant, being 122 ft long and 44 tons in weight. (U. S. Steel photo)

Frank A. Banks retires, Grand Coulee builder

Frank A. Banks, builder of Grand Coulee Dam and other major Reclamation structures on the Columbia River and its tributaries, will retire Sept. 29, Interior Secretary Oscar L. Chapman has announced.

Banks' retirement brings to an end 44 years of government service. He will remain with the Bureau of Reclamation in an advisory capacity. In years of active service, Banks is the oldest employee of the Bureau of Reclamation. His career encompasses an entire water system—the Columbia River basin. He worked on six dams and five rivers there.

The six major structures built by Banks in his 44-year career are:

Jackson Lake dam, completed in 1911 on the Snake River; American Falls Dam, finished in 1927 on the same stream; Arrowrock Dam, on the Boise River, once the highest dam in the world, for which Banks made the preliminary design about 1909; Owyhee Dam, on the Owyhee River of Oregon, the greatest reclamation engineering achievement of the late 1920's; Thief Valley Dam, on the Powder River of Oregon, a tributary of the Snake, completed in 1932; and, finally, Grand Coulee Dam, on the Columbia River in central Washington, greatest concrete structure in the world, physically completed in 1942, with installation of generators and construction of the pumping plant still going forward.

MAIN-SPAN GIRDERS are cast on falsework (right), prestressed, then pulled by jacks into position (left). Note rubber sleeves lying on girder at left; these are used to form the longitudinal housings through which prestressed cables are threaded.

How They're Building Philadelphia's Famed Prestressed Bridge

GENERAL CONTRACTOR Henry W. Horst started out building the first prestressed bridge in the U. S. just as if it were a conventional structure. He excavated 20 ft to bedrock in Fairmont Park, Philadelphia, and founded two spread-footing abutments and two conventional piers, to carry three spans of not-so-conventional girders.

At top of pier, work ceased being routine; the general contractor picked up his tools and made way for subcontracting specialist, The Preload Corp. of New York—licensed to perform the art of prestressing, as developed by Prof. Gustave Magnel and patented by Enterprises Blaton-Aubert in Belgium.

Preload's first move—aside from preparing to test a full-size sample girder (ENR, Nov. 3, 1949, p. 18)—was to erect timber falsework in the north side of each span to carry a 23-ft 8-in. wide work-platform at about top of pier level. On these timber trestles forms have been assembled, used and reassembled as the thirteen 160-ft main-span girders and the fourteen 74-ft stringers for the approach spans are precast, cured and prestressed.

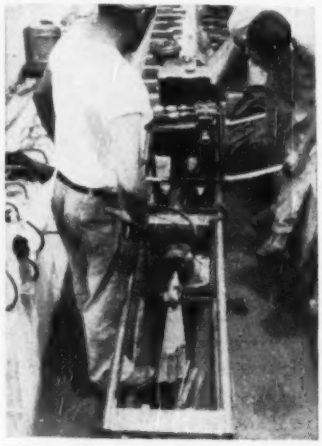
• **Casting**—The design (ENR, Dec. 30, 1948, p. 16) calls for all girders to be the same depth. (The shorter approach spans are lightened by omission of alternate girders.) So, only two variations of forms were required: one for long girders, one for short. The contractor built two of each of these out of ⅝-in. plywood, and as the job nears completion, individual forms have stood up under seven uses.

Concrete comes by truck and is lifted to the forms on the work platform in a 1¼-cu yd bucket by a crawler crane mounting a 100-ft boom with 20-ft jib.

It's low slump concrete for bridge construction. Specifications called for 2-in. slump at the beginning of the job, but were liberalized to 3½ in. for easier and faster pouring when it was found the required 5,400-psi 28-day strength was attainable at the greater slump.

It's a rich mix. There are 8½ sacks of portland cement per cubic yard of concrete. The proportions of the mix are about 1-1-2, and coarse aggregate is ¾-in. crushed stone.

Plenty of vibration is used to get this relatively stiff mix through the 7-in.-wide webs of the girders and into their 30-in.-wide bottom flanges. This is complicated by the conventional temperature steel—plus rubber sleeves forming the prestressed cable housings and pipes to grout them later—that are already in the forms. To be sure that no voids are left, the contractor uses four vibrators internally (two gas and two electric) and four electric vibrators externally (two clamped on the forms and two hand-operated).



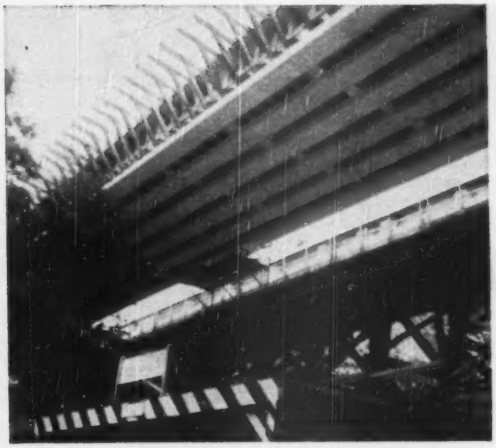
PRESTRESSER is a jack made up of pipe frame, gas-engine, pump, cylinder and piston-connected wire gripper.

The main-span girders take 78 cu yd of concrete and about six hours to cast; approach girders take about 33 cu yd and are poured in about three hours.

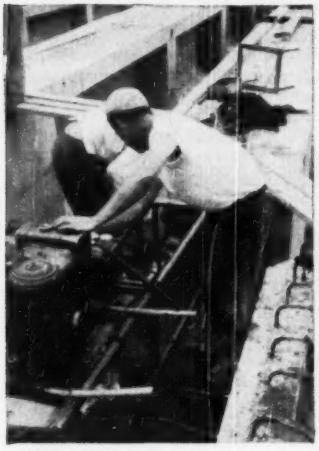
When the forms are filled, girders are struck off with hand trowels, and bent bars are then stuck in their tops to tie into the roadway slab to be poured later.

• **Curing**—Girders are wet-cured for

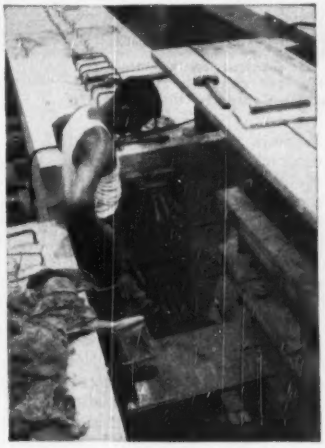
THREE SPANS have girders in various stages. Two at right are completed, moved off falsework. (Progressive Architecture photo)



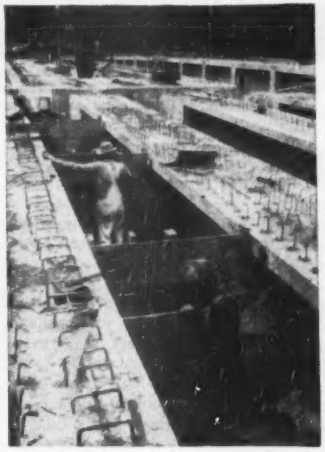
SIX IN PLACE have stiffeners through which transverse cables will be prestressed. Seventh girder is shown still on falsework.



GRIPPING two wires at a time, the jack stretches them 9¼ in. Then they're anchored. Wires are color-coded in pairs.



ANCHORAGE is same at far end. Worker wedges wires in sandwich plates with a blow of his hammer as pull starts.



PLYWOOD in the forms for approach-span stiffeners had prior use in forming girders. Girder forms each had seven uses.

72 hours, then the forms are removed. It is 14 to 17 days before the concrete attains the 5,400-psi compressive strength specified for prestressing. An admixture is used in an attempt to delay initial set, then accelerate curing after initial set has been attained. (28-day strength approaches 6,500 psi.) Cylinders made during the pours are tested as indication of girder concrete strength.

• **Prestressing**—While each girder is curing, the contractor is making up prestressing cables. These consist of 0.276-in. dia wires of cold-drawn steel with a working stress of 130,000 psi. He threads the required number of wires (64, 48 or 24) through steel spacers, which hold them together as a cable while keeping them sufficiently separated for later grouting—a rust preventative.

When the cylinders test up to the required compressive strength, the rubber sleeves forming cable channels in the girders must first be removed. These sleeves, roughly 2 in. square in cross-section, have a 1-in. dia hole through their centers to accommodate pipe stiffeners that prevent sag or stretch. Used in groups up to four, they form holes big enough for the largest (64-wire) cable. In this removal operation the pipes, then the rubber sleeves, are pulled out by a winch.

Next, cables are pulled through the girder and threaded at both ends into sandwich plates—Magnel's patented anchorage (ENR, Sept. 1, 1949, p. 186).

Working with two wires at a time (their tips are color-coded), the contractor anchors a pair at one end of the girder while pulling from the other end with the 10-ton jack of the prestressing device. An 8⅞-in. strain will give the desired wire stress; but loss of elongation in driving the anchor wedge makes it necessary for the contractor to pull each pair of wires 9⅛ in. before anchoring.

Main-span girders contract ⅝ in. at the top, 1½ in. at the bottom, and

deflect 1½ in. upward during prestressing.

Once stressed, the cables are grouted, and their exposed ends are encased in concrete. The girder is then jacked up onto greased skids to be pulled transversely to its final position by jacks attached to either end, and anchored to the bridge piers. When in position, the girder is lowered from the skids to its final bearings on the piers.

• **Transverse prestressing**—Main-span girders sit closely side-by-side with their web stiffeners and top flanges in contact. The final prestressing operation will be the transverse tying together of all girders through holes cast through each stiffener, top and bottom. On the approach spans, where there is space between girders, stiffeners are being separately cast between completed girders in forms of plywood used earlier for the girders.

Preload's job finishes up with the last transverse prestressing. The bridge once more becomes conventional, and contractor Horst comes back to complete roadway slab, surfacing, curbs, drains, walkways, railings and approaches.

• **Construction personnel**—Leo Quinn is superintendent for the general contractor; William H. Johnson is in charge at the job for the Preload Corp. The City of Philadelphia is represented on the job by Dan McKinley and W. G. Heiligman.

Lacking precedent for labor jurisdiction over prestressing, the local building trades organization assigned structural ironworkers and lathers to the actual prestressing operation on a 50-50 basis. All told, there have been no more than 25 workers on the job at one time.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill)

Effect of Defective Plans

A contract provided for the construction of 24 buildings for the state of New York. They were large, low structures, all of which except one were constructed of poured concrete. The contracting company brought an action to recover for extra work that it was required to do in repairing cracks in the concrete floors. It contended that the cracking of the floors was due to defective plans, as they called for rooms with extensive floor areas of concrete slab and topping and made no provision for expansion and and contraction of the concrete.

Evidence produced at the trial clearly established that the contract made no provision for joints to compensate for expansion and contraction of the slab floors and topping. The contractor called this to the attention of the state before any work was done.

After the work was completed the floors cracked and the contracting company, over its protests, was required to make such repairs as would put the floors in proper condition to receive the floor covering.

In an action brought to recover the cost of making repairs, the N. Y. Court of Claims denied the contractor a recovery, holding that he had failed to lay the topping in accordance with the specifications. This decision was reversed on appeal, the appellate court holding that the evidence sustained the contractor's contention that the work as performed fulfilled all the contract requirements, and as the damage resulted from defective plans, the contractor was entitled to recover the cost of making the necessary repairs.[1]

In another recent case,[2] the Supreme Court of Louisiana held that: "The general rule is that, if destruction of a work is caused by defective, inadequate, or insufficient plans and specifications furnished by the owner, the contractor is nevertheless liable." The court in its opinion also stated: "An exception to this rule is recognized where the owner expressly or impliedly warrants the sufficiency of the plans furnished by him."

In this case the contract was to furnish all labor and materials necessary to complete a sewer system in accordance with plans and specifications furnished by defendant city. The contract required the contractor to correct deficiencies existing in the sewers and to put the system in working order.

During the progress of the work, certain subsoil conditions were encountered and the contractor called this to the attention of the city's engineer and told him that in his opinion it would be necessary to use concrete cradles to support some of the sewer pipes and requested that he be given an extra work order to do this work. The engineers refused to issue the order for the extra work, claiming that under the contract the contractor agreed to deliver the work complete, and the obligation was on him to do what was necessary to complete the work.

The contractor proceeded with the work, but instead of installing concrete cradles to support some of the sewer pipes he used board cradles, which proved insufficient. As a result parts of the sewer system had to be rebuilt. The city employed another contractor to make the necessary repairs and deducted the amount paid for such repairs from the amount due the contractor. The action was brought by the contractor to recover the amount so retained.

When the action was originally tried the court granted the contractor a recovery, holding that since the damage resulted from defective plans, there was no obligation on him to remedy the defects. The court in its first opinion, quoting from a case in the United States Supreme Court,[3] stated: "The general rules of law applicable to these facts are well settled. Where one agrees to do for a fixed sum, a thing possible to be performed, he will not be excused or become entitled to additional compensation, because unforeseen difficulties are encountered. [Citing cases.] Thus one who undertakes to erect a structure upon a particular site assumes ordinarily the risk of subsidence of the soil. [Citing cases.] But if the contractor is bound to build according to plans and specifications prepared by the owner, the contractor will not be responsible for the consequences of defects in the plans and specifications. [Citing cases.] This responsibility of the owner is not overcome by the usual clauses requiring builders to visit the site, to check the plans, and to inform themselves of the requirements of the work. [Citing cases.]"

Upon reargument of the case the court reversed itself and held that the contractor was responsible and should be charged with the cost of correcting the defects in the work.

The reversal was predicated on the fact that under the contract the contractor, for a fixed sum agreed to deliver the sewer system complete in all respects. Moreover, Article 2758 of the Louisiana Civil Code provides: "Where the undertaker furnishes the materials for the work, if the work be destroyed, in whatever manner it may happen, previous to its being delivered to the owner, the loss shall be sustained by the undertaker, unless the proprietor be in default for not receiving it, though duly notified to do so."

(1) Seglin-Harrison Constr. Co. v State, 267 App. Div. 488, 46 N.Y.S. 2d 602, affirmed 293 N.Y. 782.
(2) Brasher v City of Alexandria, 41 So. 2d 819.
(3) United States v Spearin, 248 U.S. 132, 63 L. Ed. 166.

GRACEFUL CONCRETE ARCH carries Brazil's new highway over a small stream at Lavrinhas. It is one of dozens of bridges made necessary by rugged terrain.

Brazil Builds Its Biggest Highway

BRAZIL'S most impressive highway, the "Rodovia Presidente Dutra" to connect Brazil's capital city of Rio de Janeiro with its top industrial center —Sao Paulo—is now under construction.

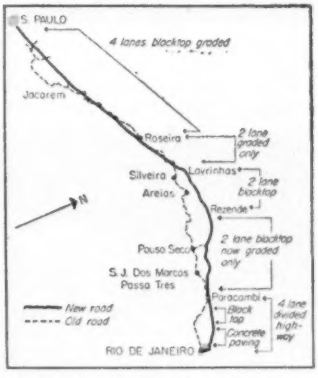
Stretching 416 kilometers (258 miles) through the mountainous countryside of Brazil, the road is engineered for growth. Starting out as a four-lane divided superhighway from each city, the roadway reduces to a single two-lane pavement at points where surveys have shown traffic diminishes. However, most of the grading will have been completed for eventual paving of a second two-lane pavement and the median zone at these points.

The new road is 110 kilometers shorter than the 526 kilometers required by the old earth and macadam route. Savings in time will be greater than the distance reduction indicates, since the old route winds through the center of every major town between the two cities.

Only 40-odd kilometers of the old road is incorporated in the new one—a 7-meter (23 ft) wide concrete section leading up from the Rio plains to the inland plateau. This is the only major paved portion of the original highway.

The construction job is budgeted for a total expenditure of about $60,000,000 for its first stage. Initial planning began in 1944, some small sections were put under construction that year, and all survey work was finished by the end of 1946.

Until late in 1949 the project was administered as a general project of the National Department of Streets and Highways. A year ago, a special highway department unit was set up, with Edmundo Regis Bittencourt as chief engineer. Virtually all the actual construction is being done by private contractors.



STRETCHING 258 miles through mountainous country, the new road will connect Brazil's two major cities.

The highway occupies a right-of-way 80 meters (265 ft) wide in some sections and 60 meters wide in others. In the flat and rolling country it has a 600-meter minimum radius of curves and a maximum 3 percent grade. In mountainous sections curves have a minimum radius of 300 meters and 5 percent is maximum grade. Pavements are 7 meters wide, whether dual or single.

During the first stage of development of the road, the concrete sections are relatively short. There will be a two-lane section extending 10 kilometers southeast from Sao Paulo, and a two-lane section extending northwest 26 kilometers from Rio. Beyond these sections the highway will continue with asphalt and other hard surface covering. The concrete sections, laid over a compacted earth base topped by sand, has a slab 25 centimeters (9.75 in) thick at the edges and 17 centimeters thick at midsection.

Black-top areas have a base of 20 centimeters of water-bound macadam in two layers, topped by 5 centimeters

of bituminous macadam. The seal coat will be of petroleum asphalt plus 5.3 percent of ASTM Spec. RT-12 coal tar, in order to correct the acidity of the rock base and reduce stripping of asphalt from the stone.

Part of the pavement, about 80 kilometers in length, is paved with asphaltic concrete in two layers, using imported asphaltic material.

In all, highway engineers say the highway will use 6,000 metric tons of imported petroleum asphalt and 14,000 metric tons of coal tar supplied by the National Steelworks at Volta Redonda.

There will be no crossings at grade. The plan thus makes necessary construction of 98 reinforced concrete bridges, 67 of them for the highway itself and 31 being overpasses. Virtually all of these bridges are finished.

All the highway overpasses are built to allow a clearance of 5.5 meters, and to the same strength requirements as the bridges on the main highway.

Most impressive part of the highway is the tremendous amount of earth moving it required. From the start of the project until April 1949, 12,000,000 cubic meters had been shifted. Then, when a small army of U.S. excavating and hauling equipment was put to work, another 15,000,000 cubic meters was moved up to December 1949. Another 2,000,000 had been handled by mid-May of this year, with roughly another 1,000,000 remaining to complete the grading.

According to the Brazilian Highway Bureau, average price paid for earth excavation was about 45 cents per cubic meter. Excavation plus transport prices averaged 75 cents per cubic meter, since many of the hauls were very long.

Although there was a total of less than 400,000 cubic meters of solid rock removal, most of it was in two large sections. One was the deepening of a cut at the Viuva Graca, 45 kilometers from Rio. Here a total of 125,000 cubic meters of rock was removed without interrupting traffic.

The largest single earth cut-and-fill job was in the Cachoeira-Lavrinhas section, where the fill across a valley reached a maximum height of 30 meters and involved 280,000 cubic meters of earth handling.

In design, technique and route, the Rodovia Presidente Dutra is a new highway. It is the first modern large-scale highway project in Brazil since the engineering of the Rio-Petroplis highway more than 20 years ago. For that reason it has provided an admirable training ground for top technicians in government and contracting, giving them a preparation for an immense highway job that lies ahead.

RUGGED COUNTRY is the word for it, as Brazilian construction men push the new highway across the highlands to reach northward to the industrial metropolis of Sao Paulo. Enormous amounts of earth and rock must be moved for the new road.

How to Use Acoustic Materials Efficiently

Information just released by the National Bureau of Standards is a guide to better design, installation and upkeep

KNOWLEDGE of the principles of acoustics is only one phase of the solution to the problem of improving sound control in a building. Equally essential to the building designer is a knowledge of the properties and limitations of commercially available materials. He should know, for example, whether or not an acoustical material can be painted without impairing its sound-control properties; or whether acoustic tile should be used, instead of acoustic plaster or sprayed-on materials.

Such information has just been made available by the National Bureau of Standards. Issued primarily to guide government agencies in the proper selection of commercially available materials, it can also assist designers of all types of buildings to improve control of noise levels.

• **Absorption coefficient** – Accoustic materials, NBS scientists point out, have the ability to absorb much more of the energy of sounds incident upon them than do ordinary plaster or masonry walls. In an acoustically treated room, a sound wave undergoes few reflections before it becomes inaudible ("Principles of Noise Reduction in Offices and Factories," ENR Nov. 14, 1946, vol. p. 643).

The fraction of the incident sound energy absorbed at each reflection is called the sound-absorption coefficient of the material. It is a dimensionless quantity, with a range from zero to unity, depending on the material and the frequency of the sound. For a smooth-finished solid masonry wall, the coefficient may be as low as 0.01, whereas for lining acoustic test rooms, sound-absorbent coverings have been developed with coefficients approaching the theoretical limit of unity.

Building designers may be interested in sound-absorption coefficients at individual frequencies or in the average coefficient over a range of frequencies. For example, acoustic treatment for auditoriums and theaters is customarily specified in terms of the sound-absorption coefficient at 512 cycles per second. When the problem is one of reducing noise levels in a room, the designer uses the noise-reduction coefficient that represents the average of the sound-absorption coefficients at 256, 512, 1,024 and 2,048 cycles per second.

• **Sound-absorption processes** – Two essentially different processes govern the absorption of sound: (1) Sound energy is transformed into heat by the viscous forces brought into play when sound is propagated through porous materials. (2) Sound is dissipated by frictional forces when acoustic materials are set into vibration by incident sound. Both processes always occur simultaneously. Either may predominate, however, depending on the structure of the material and the way it is mounted.

A porous material, NBS scientists report, can absorb sound only if its interior is permeated by interconnecting pores and voids, and if the surface is open to permit direct access to the interior. This, they say, explains why some cellular materials, like foamed glass, do not absorb sound readily. The voids are completely isolated from one another by the walls of the cells, so that air cannot pass from one void to another.

The exposed surface of acoustic materials is often perforated by relatively large holes or slots. The perforations range from $\frac{1}{16}$ to $\frac{1}{4}$ in. in width and extend deeply into the material. As long as the total area of the perforations is greater than 10% of the total surface, the surface behaves as if it were transparent to sound. The effect of the perforations is the same as if a much greater area were exposed.

The method of mounting an acoustic material can influence greatly its sound-absorbing power. Numerous measurements reveal that an increase in the air space back of a material improves its sound-absorbing power, particularly at the lower frequencies. At higher frequencies, however, other phenomena may enter the picture in such a way as to completely nullify the effects of spacing.

Sometimes, a sheet of acoustic material may be constrained at some points more than at others by being nailed to furring. Sound will cause flexural vibrations, which will be damped by frictional forces between the fibers or grains. This is called diaphragmatic absorption and is exhibited by many fibrous materials, like felted asbestos, wood or glass fibers. Such materials can absorb relatively large amounts of sound, even with an impervious surface. Occasionally, acoustic tiles and boards are made more flexible by scoring to take advantage of the diaphragmatic absorption process.

• **Types of materials used**–Acoustic materials are made from a great variety of substances and combinations of ingredients. Very efficient sound-absorbers have been made from vegetable fibers: Wood, bagasse or cotton. Hair felt is still used but not to the same extent as formerly. Mineral fibers, such as asbestos, glass and mineral wool, enter into many compositions, as do vermiculite, pumice and perlite aggregates. Also, binding agents often contribute considerably to the sound-absorption of a product, and sometimes the porosity of materials is increased by addition of a suitable foaming agent to the mix.

Acoustic materials made from these substances are available in several forms: Prefabricated materials, plasters, sprayed-on materials and acoustic baffles. Building designers resolve choice of material by such considerations as cost per unit of absorption, appearance, cost of maintenance, fire resistance and method of application. Other considerations are resistance to vermin infestation and resistance to moisture.

• **Prefabricated materials** – Acoustic materials in the form of flat tiles or boards–may be cemented directly to walls or ceiling, nailed to furring, or supported on suspension systems. Since the manufacturing process can be accurately controlled, the chief advantage is the assurance that the material will have the sound-absorption coefficients specified by the designer.

This is not true in general, NBS scientists say, for the materials intended for plastic application. The manipulation of materials on the job

RADIO STUDIO—perhaps an extreme example of an application of acoustics—is designed for strict sound control.

site often cannot be closely controlled. Slight departures from formula, or even unusual drying conditions, may materially affect the plastic material's sound absorption.

A large portion of acoustic tile sold is applied directly to walls and ceilings by means of acoustic cements. When this method is used, certain precautions should be taken: Walls should not be covered with loose paint, or paint that may become loose in time. Acoustic cements should not be used on walls subject to sweating. And their use may not be advisable on newly constructed concrete and plaster walls, which often contain alkaline ingredients.

• **Acoustic plasters**—Often, architects require acoustic treatment to be applied over broad areas unbroken by visible joints. Acoustic plasters lend themselves admirably to this purpose.

Practically all commercially available acoustic plasters are properly compounded at the mill, NBS scientists say, and only water is added at the job. Although ingredients differ widely, there is a general sort of scheme followed in compounding the plasters. A porous material (pumice, cork or vermiculite) is used to give body to the plaster. A cementitious substance (gpsum, lime or portland cement) serves both as a binder and as a plasticizing medium for application by trowel. A foaming agent is often incorporated to increase porosity. And fibrous materials (shredded asbestos, wood pulp, or cotton linters) improve cohesion during application and strength of the dry plaster. Some of these shrink when drying and so add to the porosity.

Many of the ingredients are soluble in water and during the drying process are carried to the surface and deposited. In some cases, a thin impervious film, or glaze, completely closing surface pores, is formed after the plaster has dried. Except at very low frequencies, when diaphragmatic absorption occurs, such plasters exhibit low absorbing power and require stippling when partly dry to remedy this condition.

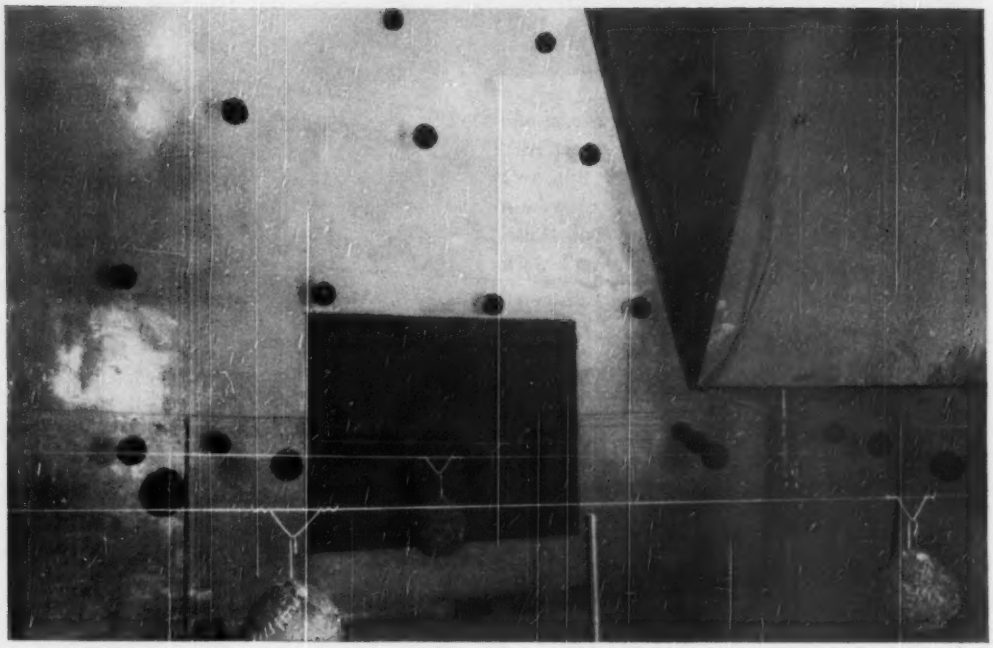
Plasters must be applied by skilled mechanics to obtain the desired sound-absorption properties. Recommended mix proportions and mixing time must be adhered to rigidly. A slight change in water proportions may not only change the surface texture but may also ruin sound-absorption characteristics.

Most acoustic plasters are applied over scratch and brown sanded-gypsum-plaster base coats either on metal or gypsum lath. There are a number of acoustic plasters, however, that are applied on base coats of the same compositions as the acoustic plaster itself. On account of their lightness, these homogeneous plasters exhibit relatively large diaphragmatic absorptions at low frequencies.

In general, the surface of acoustic plasters may be trowled with an ordinary steel trowel or worked over with a float of cork, shingle, or mohair to produce various surface textures. The troweling or floating must be done at the proper time after application, as specified by the manufacturer. Premature troweling or over-troweling may bring the finely pulverized plasticizing ingredients to the surface. The accumulation closes off the surface pores with an effect on sound absorption similar to that of glazing. Troweling or floating too late may leave trowel marks and an uneven surface texture.

• **Sprayed-on materials**—A number of fibrous materials, notably asbestos and mineral wool, are applied by spraying the shredded fiber and a suitable binder directly on the surfaces to be acoustically treated. The material is then rolled or tamped to a smooth surface. Sprayed-on materials can have comparatively high sound-absorbing powers, depending on their porosity and thickness, say NBS scientists.

The chief disadvantage of sprayed-on materials is their structural weakness when applied too loosely, or when insufficient binder is mixed with the shredded fiber during spraying.



ROOM in which felt-covered spheres are suspended is used by National Bureau of Standards for sound-absorption tests.

If shedding of the fiber occurs, it may be stopped by addition of the requisite amount of binder during spraying, or by sizing or painting the finished surface.

Sprayed-on materials are relatively soft and thus are not adapted for use in locations like gymnasiums or hospitals for the insane, where they may be accidentally dented. Yet, it is this very structural weakness of sprayed-on materials that makes them an acoustic medium with very unusual characteristics from the standpoint of decoration.

Occasionally, weak but exceptionally resilient materials are encountered that can be painted repeatedly until their surface pores are completely closed without marked diminution of their sound-absorbing power. In fact, such materials may acquire additional absorbing power, especially at low frequencies, after repeated painting.

• **Acoustic baffles**—It often happens that a room with large window areas has insufficient wall area for proper application of acoustic material. In such instances, recourse may be had to acoustic baffles; i.e., sound-absorbent structures that are placed away from the walls in a position where they will not interfere with light from windows. Baffles also may be used to isolate individual machines.

To be effective, baffles must be very highly sound absorbent; they generally consist of thick layers (3 to 6 in.) of porous materials. Fibrous substances, like mineral or glass wool, encased within perforated metal or perforated asbestos-board coverings, are often used. However, baffles may also be constructed of highly porous masonry.

One of the most interesting applications of baffles is the control of noise in airplane engine tests. The intake and exhaust stacks in modern test stands—generally about 20 ft long and 20 x 20 ft in cross-section—are sometimes honeycombed with porous masonry units, or are constructed of ribbon walls consisting of parallel sheets of perforated-metal-clad mineral or glass wool. As a result, the sounds produced by the engines are highly attenuated on passing through.

• **Paintability**—In common with all interior finish materials, acoustic materials must be painted periodically to restore appearance. Unfortunately, painting is not always compatible with preservation of sound absorption. One injudicious coat of paint on some porous nonperforated tiles or plasters can practically ruin acoustic properties. The acoustic life of nonperforated materials may be prolonged indefinitely, however, according to NBS, if the following precautions are observed:

Nonperforated materials should always be spray-painted; they should never be brush painted. Even with spray painting, the paint should never be applied to bring the surface to the full color or shade of the paint. Rather, enough paint should be applied to hide the old surface only reasonably well. Beyond a certain point, addition of more paint does not enhance the color or increase the light reflectivity greatly, but it does lower the sound-absorbing power disproportionately.

The type of paint used apparently plays only a minor role. Numerous experiments at NBS indicate that the factor that counts most is the amount of solids deposited in the pores. When the pores are filled, the surface becomes impervious to air and sound absorption is reduced.

Further data on acoustic materials may be obtained from a letter circular, "Sound-Absorption Coefficients of the More Common Acoustic Materials," published periodically by the National Bureau of Standards, Washington 25, D. C.; Federal Specifications SS-A-118a obtainable for 5 cents from the Superintendent of Documents, Washington 25, D. C.; and "Effect of Paint on the Sound-Absorption of Acoustic Materials," by V. L. Chrisler, published in the JOURNAL OF RESEARCH, NBS, 24, 547 (1940), which can be obtained from the bureau.

Rodgers Hydraulic JACKING EQUIPMENT...

- JACKING CYLINDERS (50 TO 600 TONS)
- HAND AND POWER PUMPS
- QUICK COUPLERS
- VALVES AND HOSE

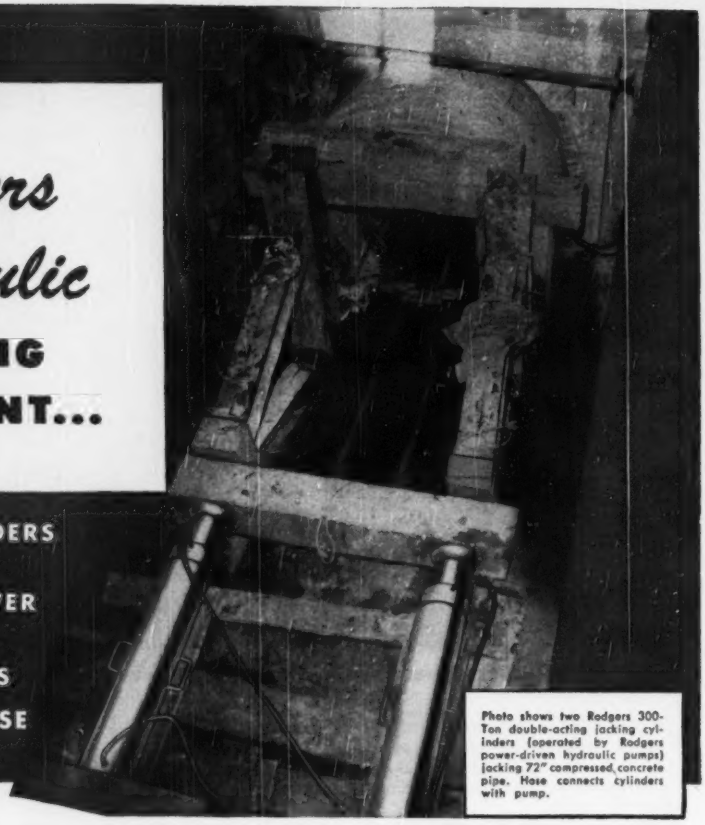


Photo shows two Rodgers 300-Ton double-acting jacking cylinders (operated by Rodgers power-driven hydraulic pumps) jacking 72" compressed concrete pipe. Hose connects cylinders with pump.

SAVES YOU TIME AND MONEY ON JOBS LIKE THESE...

SEND FOR NEW CATALOG

To learn advantages of Rodgers Jacking Cylinders on construction jobs . . . get the new Rodgers Catalog No. 317. It gives full information.

Wherever you need versatile, efficient jacking power on the job — you'll want a Rodgers jack. A complete selection of hydraulic cylinders in various capacities and lengths of ram travel are available — to be used with either hand-operated or power-driven hydraulic pumps.

Cylinders may be operated either singly or as a group for a straight jacking of compressed concrete pipe, corrugated pipe, well casing, etc., or used in the operation of the shield jacking method. Two sizes of quick couplers, 4-way and metering valves, and high pressure hose are available accessories.

Complete specifications, illustrations and suggested uses are included in the new Rodgers Jacking Equipment Catalog.

- JACKING COMPRESSED CONCRETE PIPE
- JACKING CORRUGATED PIPE
- JACKING WELL CASING
- JACKING SHIELD FOR TUNNELING

HYDRAULICS Rodgers

Rodgers Hydraulic, Inc.

7441 WALKER ST., ST. LOUIS PARK, MINNEAPOLIS, MINN.

HYDRAULIC POWER EQUIPMENT

Coal Mining: Stream Pollution Culprit

• By-products of coal mining are one of the most serious sources of stream pollution in the Ohio River Basin. Yet very little has been done about the problem. Here are some of the polution facts-of-life, bluntly presented to a recent meeting of mining engineers by Kenneth S. Watson, assistant director of the Ohio River Valley Water Sanitation Commission.

COAL MINING is ruining many of our precious surface water supplies. You don't need to look further for proof than the Ohio River Basin—where coal production in seven states adds up to about 75% of the national total, says Watson.

The major pollution problems growing out of coal mining are two:

1. Acid mine-wastes, hardness constituents and iron elements.

2. Silt, which coats the bottom of waterways, fills up reservoirs and storage areas.

There are some solutions possible right now. But most of the problem lies in the region of the unexplored—and is a challenge to the mining industry that has been taken up in the most half-hearted manner.

A glance at the accompanying map indicates where the coal-bearing areas of the Basin are, Pennsylvania and West Virginia being the major producers.

• Too much acid—Every year the equivalent of more than 2,500,000 tons of sulfuric acid from underground mines is discharged into the streams of the Ohio Basin, according to a U.S. Public Health Service survey. Slightly more than half of the acid has its origin in abandoned mines.

Mixed with the acid discharges are hardness constituents and iron elements that impair water quality. The hardness constituents are large quantities of ferrous sulfate (copperas) and aluminum sulfate. Manganese, another element detrimental to water supplies, usually accompanies iron found in acid drainage from mines.

Another source of acid drainage is strip mining. Considerable quantities of acid drain from this type of operation into surface waters. No estimate of the amount, however, is available.

Large quantities of silt, incidentally, enter the water courses of the Ohio Basin as a result of strip-mining operations. Silt is being recognized more and more as a serious stream polluter (ENR June 9, 1949 p 64).

• Coal washing—A great number of coal washeries are located in the Ohio Basin. This number is growing rapidly.

These coal-conditioning plants are operated to reduce ash content of finished coal. This results in the discharge of large quantities of silt and fine coal into surface streams daily.

The black pollution—from the washeries—is readily visible for many miles below the point of discharge. It rapidly coats the bed of the receiving streams.

In contrast to the lack of remedial measures for mine acid pollution, there is a definite answer to washery pollution, Watson emphasizes. The coal industry has the technical know-how to cope with this aspect of its pollution problem, he says.

How bad then is this waste problem? Watson puts it this way: "The acid drainage from mines affects such a vast portion of the valley's surface streams that it is today the basin's most obvious water-pollution problem."

• Affects Supplies—Many public and industrial water supplies are drawn from the Ohio and its two main tributaries. One study indicates that 67 municipal plants—in six states—draw water from the Monongahela, Allegheny and Ohio Rivers. These plants supply more than 3,679,000 people with 432 mg of water daily (Census of Water and Sewage Works, USPHS, 1948, 1949). It's important also to realize that a considerable number of plants—not included in this summary—are located on acid-polluted streams and serve additional thousands of people.

Ohio Basin waters are widely used as sources of supply for industry. But data on total industrial consumption are not available.

Other activities that suffer loss and damage as a result of mine-acid pollution include: Water navigation, fishing, recreation and agriculture.

• Dollar damage—Mine acid corrodes metal structures with which it comes into contact. This is especially true in small streams where concentrations may be very high. For conditions during 1940, mine damage is estimated to be responsible for $2,071,000 in damages each year. (See table). Applying to the Ohio Basin above the Pennsylvania line, this figure, it should be remembered, should be multiplied by a factor of 1.5 or 2.0 to convert it to present cost conditions. The conversion will undoubtedly be conservative because no allowance is made for either the increase in mine-acid drainage or water usage since 1940. And it would be considerably increased if it covered all portions of the basin affected by mine drainage.

• Corrective action—Air-sealing of abandoned mines, the merits of which are widely debated, was considered by many to be the best answer to the control of acid discharge. In the middle thirties, vast numbers of men were placed at work sealing mines. This work-relief program, which lasted until 1942, was done by the mining states and the Works Progress Administration. It was sponsored by the Public Health Service.

Seven of the eight Ohio Basin states participated in the sealing program.

ANNUAL DAMAGES DUE TO ACID MINE DRAINAGE

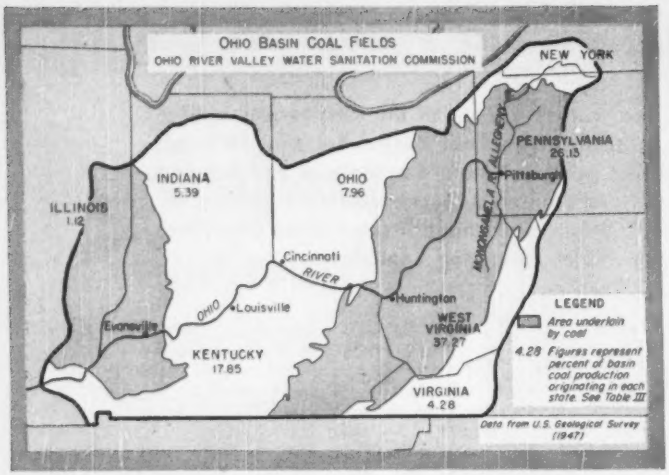
(Capable of Accurate Estimation Above the Ohio-West Virginia-Pennsylvania State Line)*

(U. S. Public Health Service)

	Total Annual Damages**
Domestic Water Supplies	$364,000
Industrial Water Supplies	407,000
Steamboats and Barges	1,143,000
Power Plants	76,000
River & Harbor Structures	76,000
Floating Plant (U.S.E.D.)	5,000
Total (1940)	$2,071,000

* Considerable mileage of mine-polluted streams in the basin not covered by this table.

** Each figure of estimate can be multiplied by a factor of 1.5 to 2.0 to convert to present cost levels.



HEAVILY WORKED COAL FIELDS underlie six of the Ohio Basin States. They discharge the equivalent of more than 2,500,000 tons of acid yearly into the streams.

And more than $7,000,000 was spent.

A proper evaluation of the merits of this program is not possible because of the nature and extent of the work. Probably of greater consequence is the fact that no provision was made for the maintenance of the completed mine seals. Very few, if any, stream benefits still accrue from the program, Watson believes.

The Bituminous Coal Research, Inc., voluntary research organization for the industry, recognized in 1943 the mine-pollution problem by including in its program a small study project at West Virginia University. One or two small projects have been maintained by that organization since that time at a total cost of about $100,000.

Last year about $22,000 was spent in support of the West Virginia project and one at the Bureau of Mines in Pittsburgh. But—in comparison to the amounts spent by other industrial groups on pollution investigations—this amount seems almost insignificant. For example, the National Council for Stream Improvement (pulp, paper and paperboard industries) has spent $900,000 to date and $155,000 in 1949 on pollution studies; the canning industry has contributed about $285,000 in all, with $40,000 in 1949; and the American Petroleum Institute's similar figures are $600,000 and $35,000.

• **Too little work**—The seriousness of the mine-acid pollution problem—and the example set by other industries—should suggest to the mining industry a considerable expansion of research efforts in the pollution-control field, says Watson. It is a fact that the coal industry's pollution-control record does not compare favorably with many of the equivalent-size industries. And this statement is true in spite of the fact that the coal industry is one of the largest under consideration. Moreover, it has no pollution-control staffs representing individual companies at work on the problem.

• **In the public interest**—Where mine-acid pollution has been involved, the courts have set some strong precedents that hold the public interest paramount. Watson notes in the Indian Creek case the court in effect ruled that mine drainage was destroying a public water supply of a large number of people, (as well as of an important industry) and thus must be stopped. The fact that the Pennsylvania courts were upheld in this case by the Supreme Court of the United States (in stopping acid drainage) is of great significance.

Another example is at Shinnston, W. Va. Here strip and underground mine drainage destroyed the city's water supply. When faced with court action, the mining companies gave way before the principles of right and justice. They settled the matter by paying the city $70,500 in damages. This money is being spent to develop a new water supply.

In the Black and Goebel case, the state supreme court upheld the right of the Commonwealth (Pa.) to assure itself—before issuing a permit—that new mining operations will not destroy the purity of the receiving streams (Opinion of the Supreme Court of Pennsylvania, Middle District, Maxey, C. V., Nov. 21, 1949.)

As a result of the McDonald public water supply having been destroyed by strip-mining companies in this case, these companies settled the matter when faced with court action (R. H. Snyder, Journal, American Water Works Assn., Vol. 39 No. 8, 1947). They paid $500,000 to the water company to permit development of a new supply to cost $700,000 (Mining Engineering, G. M. Dester, May 1949).

• **Where do we stand**—Study of court action involving mine pollution would lead to the belief that neither the mining interests nor public water-supply officials are completely familiar with their respective positions before a court of equity, says Watson. As the result of the Indian Creek opinion, the mining industry might thoroughly consider its position as the water-supply industry awakens to its rights (see also ENR June 1, 1950 p. 27.) The coal industry's case in the Ohio Basin, moreover, is not improved by the fact that it cannot point to many instances in the acid drainage, strip-mining, or washery fields where much real effort has been made to control or find an answer to stream pollution.

Watson sums it up and points to the future:

(1) Every effort must be made to correct that portion of the mine-pollution problem for which an answer is known; and

(2) Research efforts to answer the unsolved acid problem must be greatly expanded.

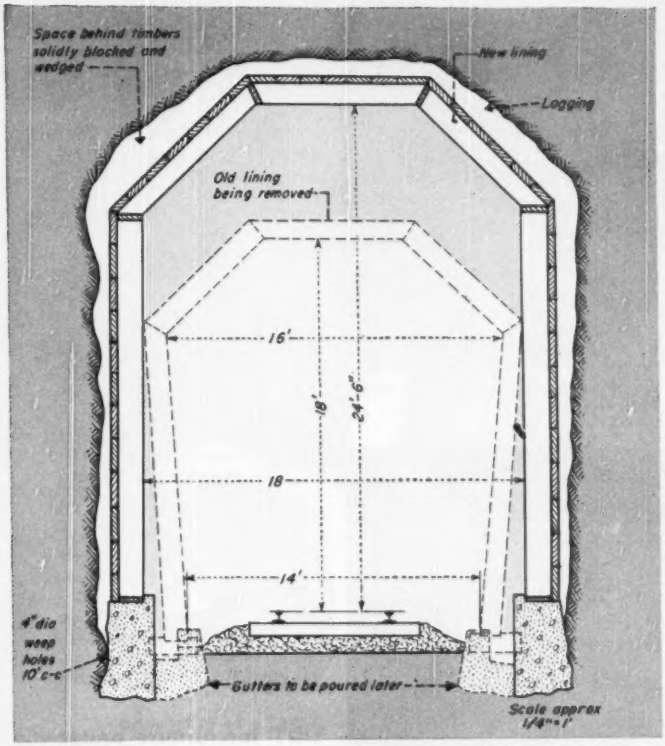
Propose exchange center for structural engineers

A committee representing the U. S. membership of the International Association for Bridge and Structural Engineering is investigating the establishment of an international exchange center of information for structural engineers of all countries who work on the same or related problems.

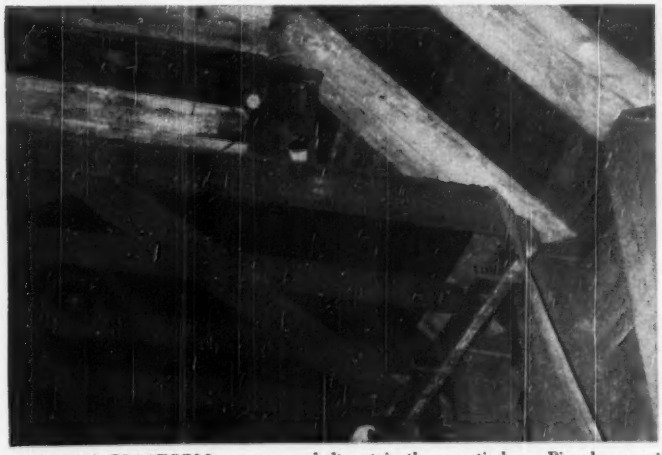
Under the chairmanship of L. Coff, consulting engineer of New York City, the committee is reviewing all possible avenues through which such an information center could be set up—including the United Nations and governmental and private organizations.

The International Association for Bridge and Structural Engineering, with headquarters in Zurich, Switzerland, functions on a national basis in the various countries throughout the world. The U. S. Council, under the chairmanship of David B. Steinman, reports that a recent sharp upswing in membership in the United States brings the U. S. total well toward 200.

Tunnel Enlargement is Taking 12 Years



A 12-YEAR PROGRAM is involved in enlarging a Southern Pacific Railroad tunnel as shown. Oversize shipments must now be rerouted. After new timber lining is installed, concrete lining will be placed.



WORKING PLATFORM operates on bolts set in the new timbers. Pipe-sleeves act as rollers. Note the relatively clean appearance of the new timbers as opposed to the sootiness of the old timbers and working platform.

FOR TEN YEARS the Southern Pacific railroad has been enlarging a 3,610-ft tunnel in order to remove a system bottleneck. In two more years the job will be done. It is taking so long because the single track main-line service has to be maintained. The small crew spends only half a shift in the tunnel, and their methods must be painstakingly careful.

But it's cheaper to do it that way: A larger crew would mean lost motion. Premium shifts would be costly. Shutting down the tunnel to highball the job would mean serious loss of revenue.

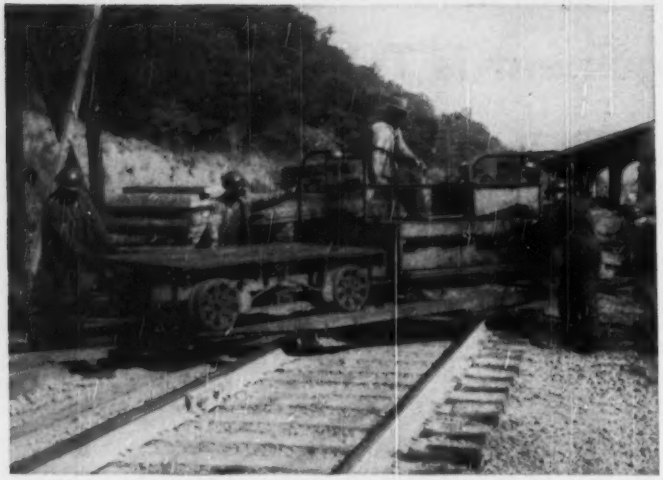
Known as tunnel No. 6, the tunnel is on the coast route between San Francisco and Los Angeles. Original construction in 1876 presents a curious contrast to the work being done today. Only 17 months were needed to build this tunnel and several others in the Santa Lucia Mountains surrounding San Luis Obispo, Calif. In that time 1,100,000 cu yd of rock was removed—representing a world's record for hand-drilled tunnels that may well still be unbeaten today.

The original tunnel was lined with redwood sets spaced on 4-ft centers. Much of the original timber is still in place. And much of it is in relatively good condition.

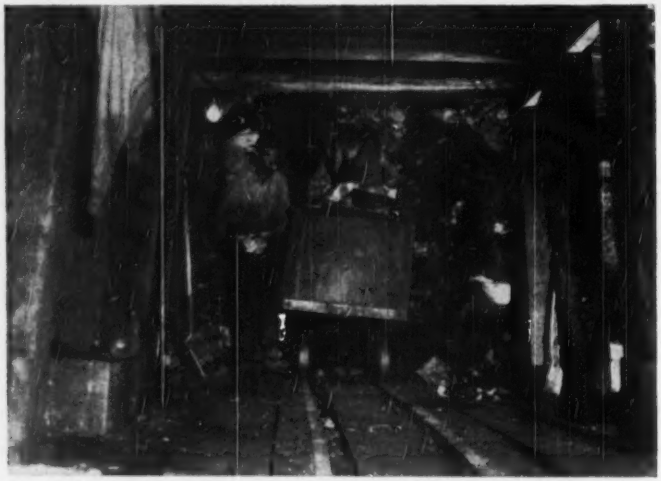
Started in 1940—The enlargement work was started in 1940 and it continued all through the war (only a small crew could be employed anyway). Many oversize wartime shipments had to be rerouted, using the railroad's San Joaquin Valley lines which roughly parallel the coast line between Los Angeles and San Francisco. The same rerouting is necessary today.

The tunnel is on a tangent and is divided into two sections, each on a rising grade toward the center. The west end ascends at a 0.2% grade and the east end has a 2.2% grade. This causes poor smoke conditions so that in addition to enlarging the tunnel, a smoke gallery 6 ft high is being installed above the arch of the east end.

Reason for the slow progress (about 8 ft a week) is that mainline train service must be maintained. Thus, workmen on an 8-hr shift average only about 4 hr in the tunnel. Besides that, the tracks must be cleared every time a train is due. This means only small quantities of rock can be blasted at a time and also when the



SEVERAL TIMES A DAY the crew comes out of the tunnel and switches its cars off the single line track to let a train through.



MUCH OF THE WORK is necessarily done by hand, thus accounting for the slowness of the tunnel-enlargement operation.

old timbers are knocked out, they must be cleared off the track immediately.

Flagmen located some distance from each end of the tunnel phone a combination signalman and timekeeper at the tunnel portal 10 min before trains are due. The signalman flashes the lights to call the men out of the tunnel. Fortunately, delays to traffic have been few and far between. Maximum has been 3 or 4 hr—and this happened only once or twice.

Two crews, two methods—Since a smoke chamber is being installed in the east end of the tunnel, methods there are much different than in the west end. This also makes convenient the use of two crews, one for each end.

On the east end, the smoke chamber is excavated in advance of enlarging work and it serves as a pilot tunnel. There is no interference from passing trains. Nevertheless, extreme care is a must—the main tunnel is just underneath.

The men work from the pilot tunnel to dig out the enlarged tunnel arch. Timbers are set on sills that rest on rock shelves. Support is later added from below, making the combination into complete bents.

By contrast the schedule for west-end construction is briefly this: The tunnel wall is excavated behind the existing timbers and a concrete curb is installed. Putting in 200 lin ft of this curb on each side requires about 3 mo. Then the old lining is removed, bent by bent, with additional excavation being undertaken and a new bent installed as each old bent is removed.

Arch work on the west end is done from a platform riding on $\frac{7}{8}$-in. bolts set in the new timbers.

Blasting must be carefully conducted. A maximum of 40 holes is drilled at one time. But each hole (loaded with a half stick to a stick of dynamite) is detonated separately. Main reason is to prevent damage to the old timbers and thus loss of the entire tunnel.

The new timber lining is being fully lagged and the space behind the lagging is solidly blocked and wedged, so that the tunnels will be concrete lined as soon as the enlarging process is finished. The lining is liable to take several more years—but the enlarged tunnel size will be usable then.

E. E. Mayo is chief engineer of the Southern Pacific Railroad and J. E. Wheeler is coast division engineer. This work is being carried on by forces of the Southern Pacific Railroad Co. under the specific direction of W. C. Harman, bridge and building supervisor for the coast division.

DDT for termite protection

A single treatment of the soil with which wood is in contact with a solution containing 5 percent of DDT will give the wood protection against termites, according to an announcement just made by the U. S. Department of Agriculture. Complete protection for at least five years, is provided.

The studies on which these statements are based were begun in 1943 by entomologists of the department's Bureau of Entomology and Plant Quarantine. They indicate that 5 percent of DDT in No. 2 fuel oil, when applied to the soil surrounding wooden structures at the rate of one quart per cubic foot of soil gives the desired protection. How long the protection will last is still to be determined as this particular part of the research has only been under way for five years. The treated soil still remains effective against termites.

The entomologists also hope to determine whether DDT is better than sodium arsenite for this purpose. The latter chemical is fairly cheap and highly effective, but very poisonous.

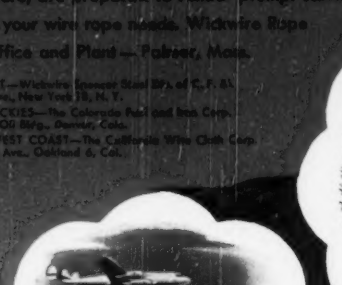
WICKWIRE ROPE

A PRODUCT OF CF&I

Ask any user . . . you'll find them everywhere

In scores of industries, users of Wickwire Rope have developed an affectionate respect for its performance, safety and long life. And, for true economy, they use Wickwire's WISSCOLAY® Preformed. It lasts longer — is easier to cut, splice and install. It's kink-resistant and safer to handle. Wickwire Distributors and Rope Engineers, in key cities everywhere, are prepared to render prompt service in meeting your wire rope needs. Wickwire Rope Sales Office and Plant — Palmer, Mass.

IN THE EAST—Wickwire Spencer Steel Div. of C. F. &I.
500 Fifth Ave., New York 18, N. Y.
IN THE ROCKIES—The Colorado Fuel and Iron Corp.
Continental Oil Bldg., Denver, Colo.
ON THE WEST COAST—The California Wire Cloth Corp.
1060—19th Ave., Oakland 6, Cal.



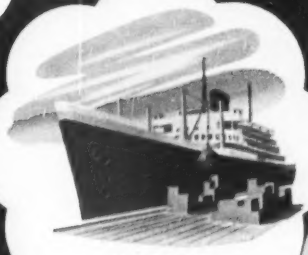
TRANSPORTATION

LOGGING

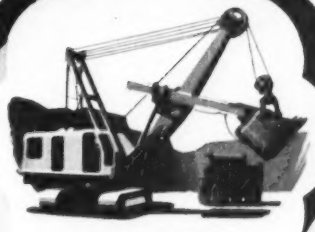
MINING

PETROLEUM

MANUFACTURING



MARINE



CONSTRUCTION

A. E. Bradmar

SIZE IS NOT IMPORTANT

The Roaring River Hydroelectric Development designed and constructed for Jamaica Public Service Company Ltd., Jamaica, B.W.I. Water is diverted from springs at the source of Roaring River through a pipe line to a single unit turbogenerator plant where it is converted into 4,500 kva of electric power.

Our work includes engineering and construction for varying projects, large and small. Each receives the same technical skill and attention. Our broad experience is available to all branches of industry.

This Service Building for Alexandria and Arlington Area, designed and constructed for Virginia Electric and Power Company, houses offices for outside departments and general storerooms.

Manufacturing Building at Watertown, Massachusetts designed and constructed for The Prudential Insurance Company for occupancy by Manning, Maxwell & Moore, Inc. The total floor area is 136,000 sq. ft.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.

NIGHT—Fena Dam, a floodlit flurry of construction activity.

AND DAY—Full speed ahead, the order to all hands.

Navy Pushes Guam Dam in Race Against Rainy Season

U. S. NAVY CIVIL ENGINEERS on Guam won a race against time at Fena Dam by getting the earthfill structure high enough to withstand floods by the start of this summer's rainy season.

It wasn't easy. They had to work around the clock to do it. But they advanced the embankment to a stage safe against high water, and now they're standing by to resume work as soon as the rains subside, in November. Completion of the job is due January, 1951.

Forming Guam's first major permanent fresh water supply, the 81-ft-high earthfill will store enough water in an average rainfall year to supply 7 mgd and thus replace the many existing temporary sources on the island that now require very heavy maintenance.

Fena is just a small dam. But it is distinguished by the speed its builders have shown in placing and compacting a difficult fill material (but the best there was available) in difficult weather.

Borrow material for the impervious core of the 1,600,000-cu yd structure is a plastic clay with unusually low density and a 65% moisture content. This had to be scarified in the borrow pit to dry it down to 50% moisture before placement. Fully compacted, this material weighs but 70 lb per cu ft.

Drying the fill was not so simple, even in the so-called dry season. The vexing problem of frequent rains persisted, and 0.2 in. of rain was enough to delay the work a full day. Best available records indicate an average annual rainfall near 100 inches at the site. From 13 to 15 in. per month fall in the July-to-October rainy season.

• **Progress 'til now**—Work began on the project in July, 1949, and was well under way when last November came. Construction gathered momentum as experienced crews went to work on excavation—75 ft deep for the spillway and 50 ft for a cutoff trench. Before the trench was backfilled, the gravel in its bottom was grouted through 250 holes 60 to 100 ft deep on 10 to 40-ft centers.

Earth then was placed in 6-in. layers and compacted by sheepsfoot rollers. Consolidation of underlying material was checked by piezometer readings as the fill gained height. High moisture content made necessary great care to prevent dangerous pore pressures and failure of the fill along a slippage plane.

Fortunately, the frequent showers slowed the work just enough to allow excess water inside the mass to drain down and out.

Between showers earthmovers were making three one-mile round trips an hour, and in early January the job went on a 24-hour schedule, working with the aid of portable floodlights at night.

Equipment operators, convinced of the need for speed and cursing all on-coming clouds, had to be warned against racing machines too fast. Their enthusiasm endangered their equipment.

Two 30-in. pipes were all the diversion channel needed for the Fena River during dry months. Meanwhile, work began on a permanent diversion tunnel, horseshoe shape and about 12 ft in diameter, 1,100 ft through rock with bad faults and crevices. Special shoring had to be used in addition to conventional timbering. Concrete lining of the tunnel was done by compressed air and a pneumatic concrete spray.

At the tunnel's upstream end an intake tower and screen house are under construction. When completed, the 111-ft tower will be Guam's nearest thing to a skyscraper.

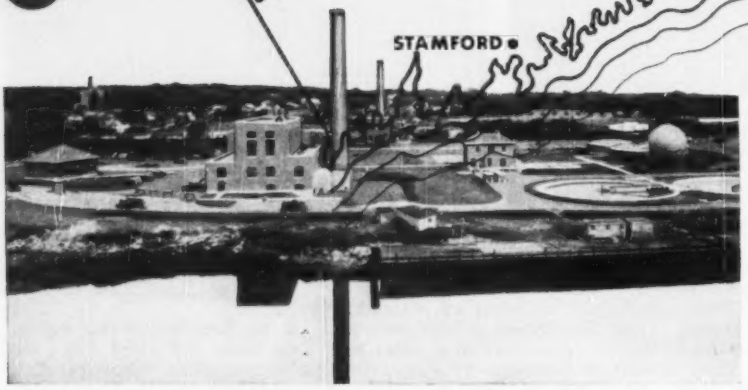
Downstream at the tunnel's outlet end, the pumping plant to handle 7½ mgd is under construction. Water must be pumped over a low ridge into the distribution system for the southern part of the island.

Pumping for present supply is done by a floating plant on the river above the dam. This interim pump station is on a 20x42-ft pontoon barge held in place by timber piles. It is moored to the piles in such a way as to be able to rise and fall with fluctuations in river stage. This arrangement will also make possible its continued operation while the reservoir is being filled. Then the permanent plant below the dam will be put into operation, and the 2,000 gpm floating plant will be retired.

The entire project is under the U. S. Navy Bureau of Yards and Docks. Design and construction are the immediate responsibilty of the Civil Engineer Corps with first Capt. E. L. Hansen and later Capt. A. J. Fay as officers in charge of construction. Design was done under contract by Pacific Islands Engineers. Construction contractor is Brown-Pacific-Maxon, a combine which has done most of the Navy's postwar work on Guam.

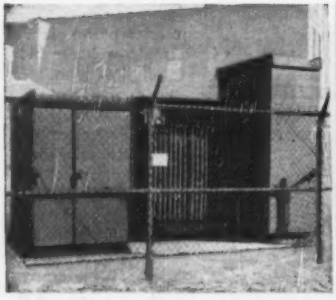
Bureau of Reclamation engineers, W. E. Collins and E. E. Foster, did soil studies at the bureau's Denver laboratories and at the site.

Stamford invests in

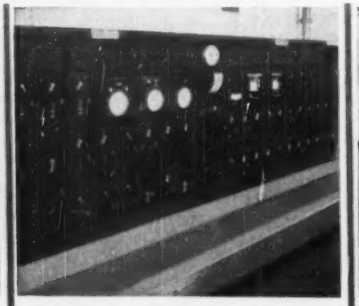


Sewage treatment and incineration are combined into one operating unit at Stamford, Conn. The plant uses the elutriation process to condition sludge. The effluent is post-chlorinated and sludge is flash dried for sale as a soil conditioner.

General Electric motors and control used throughout the plant keep running expenses low.



At this outdoor G-E unit substation, high voltage is dropped to utilization voltage for distribution to G-E motors and control throughout the plant. G-E standardized unit substations are completely factory-assembled, ready-to-install units.



One of the nerve centers of the Stamford plant, this G-E Cabinetrol control installation centralizes low-voltage control of motors, lighting, and other auxiliary equipment. Such installations conserve space and save steps; make for more efficient operation.

These G-E vertical motors drive centrifugal pumps which pick up sewage after it passes through bar screens. The control above the first motor automatically selects the pump or pumps needed to handle the flow. Five motors—one 20-hp, one 40-hp, and three 75-hp—are used.

GENERAL ELECTRIC

666-57

CLEAN WATERS

Modern G-E Equipped Combination Wastes Plant Economically Serves City of 70,000

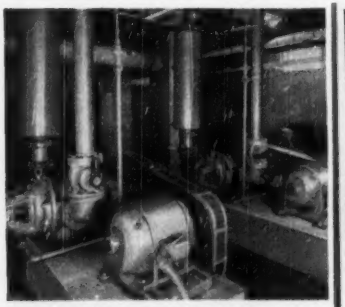
Before 1944, most of Stamford Connecticut's sewage had to run through its treatment plant quickly or by-pass it entirely. This created an unhealthful condition in Stamford Harbor and Long Island Sound. Today, *Stamford's waters are clean.*

Finding itself in the same situation as many other cities where the war brought increases in industrial activity and population, Stamford solved its sanitation problem by rebuilding its sewage treatment and incineration plants to combine them into one operating unit.

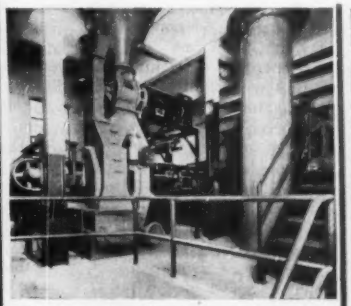
This investment in *clean waters* is returning large dividends in the form of better health, cleaner beaches, and higher community standing. What's more: the plant operator says the power cost of the new plant is less than the old one, thanks to modern processes and equipment recommended by the consulting engineer and General Electric.

General Electric can help your community get that new or improved sewage treatment plant by giving engineering assistance to help you and your consultant —*first* in helping formulate electrical plans and *second* in building public support with the full-color sound movie *Clean Waters*.

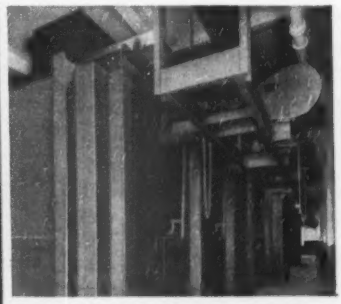
Contact your General Electric office early in the planning stage. The nearest G-E office is listed in your local classified 'phone directory. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*



The Tri-Clad motors shown above are V-belted to vacuum pumps used in the sludge dewatering process. Sludge is pumped from the elutriation tanks into vacuum filters for de-watering. Motors are 15 hp, 1800 rpm, and operate on 208-volts, 3-phase, 60-cycle a-c.



From the vacuum filter, sludge is conveyed from the sludge drying and weighing equipment. Drying and weighing equipment is at left, a dry divider at right rear. View shows one of several G-E motors used throughout the process.

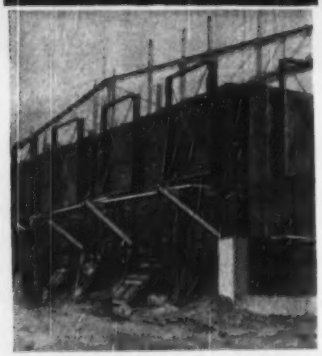


Dry sludge is driven by means of screw feeders into garbage and refuse incinerators when required; normally, however, it is bagged and sold. Tri-Clad® special-purpose, open, gear-motors, mounted on the frame at upper right, chain-drive the conveyors.

GE CO-ORDINATED SEWAGE-PLANT ELECTRIFICATION

RENT

these cost-reducing forms for concrete



ECONOMY METAL FORMS

Use this nationwide Form Rental and Engineering Service that saves costly Labor — Material — Time when placing concrete for

- Foundations, Walls
- Water or Sewage Treatment Plants
- Tanks—Circular and Rectangular
- Bridges, Culverts and Box Tunnels

Standard units of Economy Forms are adaptable to a wide range of jobs. But where needed, special forms can be fabricated to meet your specifications.

ECONOMY FORMS CORP.

Home Office: Des Moines, Iowa

District Offices:

Kansas City, Mo.	Charlotte, N. C.
Minneapolis, Minn.	Decatur, Ga.
Ft. Wayne, Ind.	Dallas, Texas
Springfield, Mass.	Los Angeles, Calif.
Metuchen, N. J.	Denver, Colo.

READER COMMENT

How to Get Good Welds

Sir: Safe construction requires competent mechanics and layout men to perform adequately in the field in accordance with approved design. Field supervision and inspection must be adequate to ensure this result.

As Mr. Viner says (ENR Aug 24, p49), field-welding procedures on small or medium-sized jobs are without benefit of certain scientific inspection aids available to shop fabrication. Dependence rests on qualified welders and available supervision and inspection.

To be sure of obtaining qualified welders, it is well to make inquiries of the established heating contractors in the vicinity. They usually employ welders to install high-pressure steam lines, which are made of welded pipe that is subjected to an acceptance pressure test of about twice the working pressure. Competent pipe welders produce welded pipe that shows no leakage under test. These men have a higher order of ability than is required of qualified welders on ordinary structural work, and they are favorably known for painstaking work.

Field supervision and inspection consists of observing the materials and procedures used and the results obtained. The more important points are: (1) clean base metal; (2) correct size and kind of welding rod; (3) uniform good appearance of finished welds; (4) no over-welding; (5) proper skip procedure so that welding heat of 2,300 deg is not applied too long in one place; (6) work should proceed from the middle toward the edges of both heavy joints and the whole layout, so that locked-up stresses have a chance to dissipate; (7) the average length of stub ends and other wastes of welding rod should be noted; and (8) from time to time, the total amount of welding rod used should be checked against the computed weight of welds required.

As an aid to field inspection of doubtful welds, or of butt-weld splices of truss chords, or of other important welds, use can be made of the electric drill, which is always available on any construction work. Holes of ¼-in. dia are sufficient. The principle is the same as for exploring dam foundations with bore-holes.

For example: A sound butt weld will develop the full strength of the base metal. To test comparative soundness, drill a hole through the weld and another hole through the base metal 2 or 3 in. either side of the weld. The mechanic holding the drill can quickly tell if all holes give about the same difficulty. If desired, shine a light through the holes and examine the grain of the metal. The weld should appear better than the base metal, because impurities are more likely to occur in a rolled piece of structural steel than in the manufactured welding rod. Then, refill the holes with weld metal.

It is suspected that the "unhappy results" referred to by Mr. Viner are the resultant distortion and warping of light trusses after welding has been completed—or something similar. Time and money have to be spent straightening the assembly, which is consequently strained and weakened. Distortion and warping of light work is most often caused by over-size welds introduced into the shop drawings by some enthusiastic contractor who "didn't mind the extra cost, because he was glad to give the architect a greater factor of safety over design stresses."

A. H. Davison
Civil Engineer
Glens Falls, N. Y.

Test Everything

Sir: I have read your report on the Boston paving swindle (ENR Aug. 10, p. 26) and wish to offer the following remedy. Every project should have a 130% FULL-SCALE LOAD TEST on every panel constructed. Whether it is a road, floor panel, roof, or bridge, the law should make it compulsory to test the entire structure before it is put into operation. Under full-scale-test-conditions, the general contractor will be more careful in construction and the engineer and architect will double check their calculations for accuracy.

We build for the public and the public safety, and funds must be respected and safeguarded. In prehistoric times the engineers, architects and builders, with limited information, built structures that have withstood the effects of centuries. Today we have complete test data on every type of material and there is no excuse for failures. The 130% full-scale load test on the entire project will undoubtedly eliminate unscrupulous practices and irresponsible builders.

A survey should be made that would permit city officials throughout the country to indicate their opinions on the above proposal.

Charles Weisman
Camden, N. J.

"The Proof is in the Putting"

CLYDE

STEEL ERECTORS HOISTS

PUT MATERIALS WHERE NEEDED FASTER...EASIER...MORE ECONOMICALLY ON THE DELAWARE MEMORIAL BRIDGE

CLYDE DESIGN EXCEEDS ON THE JOB REQUIREMENTS

4 Clyde Hoists are speeding construction for the American Bridge Company by hoisting steel sections weighing up to 55 tons on their Delaware Memorial Bridge job.

4 Clyde Steel Erectors Hoists are handling materials and supplies on this gigantic bridge job for the American Bridge Company, United States Steel subsidiary. Hoists that were especially engineered for the job they are to perform . . . engineered to fill the exacting needs of their owners and operators.

On jobs of this nature where minutes are measured in dollars, hoisting equipment must give dependable, trouble-free performance at all times. Clyde steel erectors hoists incorporate important features that will result in safer, faster and more efficient material handling.

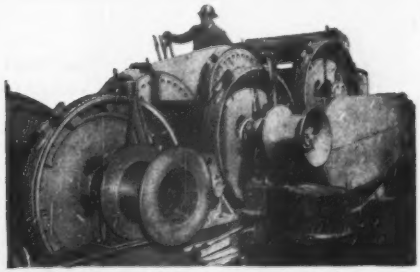
Precision made clutches and double, equalized brakes permit accurate and positive load control. Torque converters allow working at maximum hoist output with less operator fatigue.

Sturdy anti-friction bearings mean greater efficiency and less maintenance. In brief, every part is designed for its particular duty to produce a well balanced machine with safety and dependability its keynote.

Whatever your hoist requirements, it will pay you to get complete information on Clyde . . . talk with owners and operators. Clyde's records of performance are our best salesmen . . . your most valid measure of their worth.

WRITE FOR BULLETIN

Bulletin L-4 contains full information on Clyde gasoline and Diesel hoists. Our staff of engineers will gladly make recommendations and provide complete specifications on the machine best suited for your particular needs.



Closeup of a Clyde Hoist doing its job with ease on one of the largest suspension spans in the world. Easier, safer, faster operation characterizes DEPENDABLE Clyde Hoists.

HOISTS . . . DERRICKS . . . CAR PULLERS . . . BUILDERS TOWERS . . . WHIRLEYS . . . ROLLERS . . . HANDI-CRANES

CLYDE IRON WORKS, INC.

DULUTH 1, MINN

Subsidiary of Barium Steel Corp.

ALL THE CAPACITY
ALL THE VERSATILITY
ALL THE POWER
ALL THE EFFICIENCY

OF A DEEP WELL PUMP FOR SHORT OR MEDIUM SETTINGS

REQUEST FREE BULLETIN

Describing and illustrating Peerless close-coupled pumps. Request Bulletin B-159.

PEERLESS PUMPS

PEERLESS *Close-Coupled* VERTICAL TURBINE PUMPS

CHARACTERISTICS AT A GLANCE:

HEADS
Up to 1000 feet

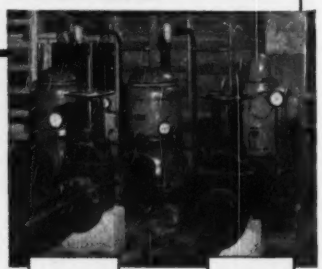
CAPACITIES
Up to 30,000 g.p.m.

H.P. RANGE
Up to 2,500 h.p.

DRIVES
As required; standard electric vertical hollowshaft or solid shaft motors; right angle gear drive; V- or flat belt; combination units.

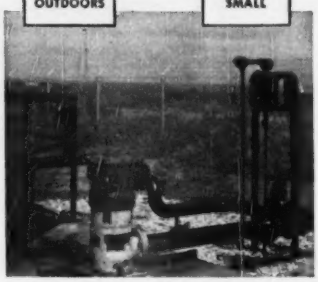
LUBRICATION
Choice of oil or water lubrication.

NO PRIMING PROBLEMS



INDOORS OR OUTDOORS

LARGE OR SMALL



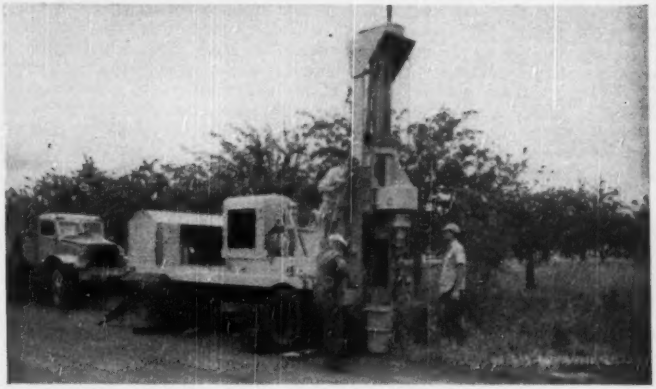
SPACE SAVING VERTICAL PUMP FOR BASINS, SUMPS, RESERVOIRS AND SURFACE WATER SOURCES SUCH AS RIVERS, LAKES, PONDS

This successful, close-coupled, modification of the Peerless vertical deep well turbine pump, for industrial processes, embodies all the outstanding design and performance characteristics which have made Peerless the leader in the sale of vertical, deep well turbine pumps. Peerless vertical close-coupled turbine pumps are economically applied to a widest range of municipal, industrial and commercial water lifting or boosting and circulation processes, where short or medium pump settings are involved. Plan with Peerless to get the power, capacity and utility of this vertical space-saving pump that will cut your pump overhead with measurable savings. Descriptive Bulletin No. B-159 describes and illustrates its design, performance and applications, write for it today.

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION

Factories: Los Angeles, California, and Indianapolis, Indiana.
Offices: New York, Atlanta, Chicago, St. Louis, Phoenix, Fresno, Los Angeles; Dallas, Plainview and Lubbock, Texas; Albuquerque, N. M.

FIELD AND OFFICE



EARTH AUGER HELPS HIGHWAY PLANNING—Newest tool use by the Oregon highway department is this earth auger for forecasting subsurface conditions. Portable mounting permits use in all sections of the state. Holes from 8 in. to 20 in. dia can be drilled to 100 ft deep. Auger is raised and lowered by hydraulic machinery. Known commercially as a McCarthy vertical drill, the equipment was designed for coal mining use. Manufacturer is Salem Tool Co., Salem, Ohio.

Water Line Goes Over Canal

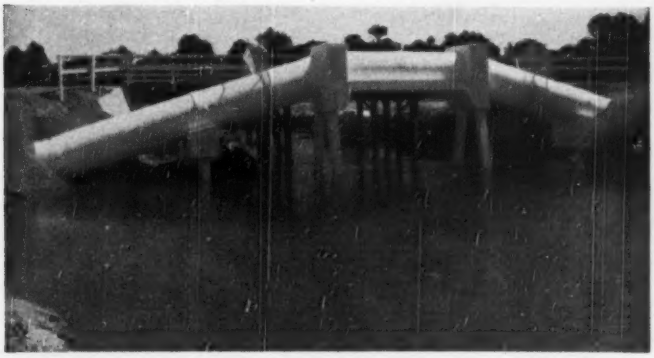
The new 48 in. water supply main for Miami comes up out of the ground and crosses the Coral Gables canal so that boats pass beneath it.

The canal is navigable and the pipe crossing is designed to give the same channel width and clearance as the highway bridge.

A pipe crossing under the canal was considered but would have cost considerably more. The canal is about 8 ft. deep, in every porous rock, and it was not considered possible to keep the approach trenches pumped out or to construct a tight cofferdam.

The crossing consists of three 16-ft. lengths of 48 in. prestressed concrete cylinder pipes supported on precast-concrete piles driven into the bottom of the canal. The piles are capped with poured-in-place saddles that support both the bend and the ends of the straight piles. After the pipe was grouted into the saddle, the piers were carried up over the pipe to tie it down. At working pressure of 80 psi, upward thrust at bends would lift structure out if it were not securely anchored.

The pipe was manufactured at Miami by Price Bros. Co. of Dayton, Ohio. The crossing was installed by Leach Construction Co. of Miami, who held the pipeline contract. The overhead crossing was designed by the Water Department Planning Division. —CHARLES F. RUFF, BUCK, SEIFERT AND JOST, NEW YORK CITY.



THE CORAL GABLES canal crossing on Miami's new 48-in. water supply main is carried on pile bents. The central opening—through which boats pass—gives the same clearance as the highway bridge in the background.

THE VERSATILE PENCIL OF TOMORROW
Speed Your Paper Work
WITH A WORLD-FAMED
norma
MULTIKOLOR PENCIL
Colors in One Quality Pencil
RED
BLACK
BLUE
GREEN
actual size
Jewelry-crafted . . . precision-engineered . . . Guaranteed for mechanical perfection . . . From $4.50 up at all stores.
ENGINEERS
Discover how Norma speeds your work on blue-prints, plans, schedules, etc. . . . Yellow may be substituted for any color on request . . . Write for new book, giving many professional uses for Norma Pencils; no obligation.
NORMA PENCIL CORP., NORMA BUILDING
137 West 14th Street, New York 11, N. Y.
Please send me, without charge, your new attractive book showing how Norma can help speed my special daily tasks.
Name
Address
City Zone State
© Norma Pencil Corp. 1950

DEVELOPMENTS ABROAD

New Suez Canal bridge

The Egyptian State Railways management is taking bids for the construction of a rail and highway bridge across the Suez Canal. The plan for the two-level bridge has been drawn up by Saad Saudi, assistant inspector-general of the Bridges and Highways Department, and has been approved by the Suez Canal Co.

Bids for construction of the bridge will have to be in by the end of September. Work on the bridge is expected to start by mid-December and end in 18 months. The entire project is expected to cost $1,500,000, including construction of highways and tracks, offices and buildings for engineers and permanent officials near the bridge.

Fifteen hundred tons of steel are estimated as needed for the bridge and the electrical mechanism which will pivot the bridge to allow navigation through the canal. The foundations will require 3,660 cu yd of reinforced and non-reinforced concrete.

The bridge will be just north of the Ismailia railway junction and will span the 250-ft navigable channel of the canal. Although many different plans for a new bridge across the canal have been offered, they were all rejected by the Suez Canal Co. on the ground that they might obstruct navigation. The company had also demanded that the bridge be over 160 ft. above the surface of the water, but government engineers said this would make it impossible to connect the railroad track over the bridge coming from the Asiatic side to the Ismailia junction on the other bank of the canal.

When the new bridge is completed, the Ferdan bridge further north will be demolished. That bridge was built during the war by the Egyptian State Railways to help the communication lines of the British Army in the Middle East. After the war the Suez Canal Co. asked that the Ferdan bridge be demolished, because the company was opposed to construction of any obstructions within the channel. However, the company subsequently agreed to the building of a new bridge.

Uruguayan subway—A group of French experts in Montevideo is drawing up plans for Uruguay's first underground railway, linking the center of Montevideo with the suburb of La Union, nearly four miles away. Their plans are reported to be well advanced, though it is not expected the line will be ready for some years yet. The line, to be known as the Centro-Union, will have 14 intermediate stations. Only 20 percent of the tunnel will have to be driven through hard rock.

Vacuum concrete slabs to line 20-mile canal on a power and navigation project in France

Electricite de France is lining a 20-mile length of the Alsace Canal at Ottmarsheim with 6,000,000 sq ft of precast, reinforced, vacuum concrete slabs. One-third of the length is now lined.

The project, near Mulhouse in Alsace, is part of a power plant, canal and lock construction job the French governmental agency is doing with the aid of Marshall Plan funds.

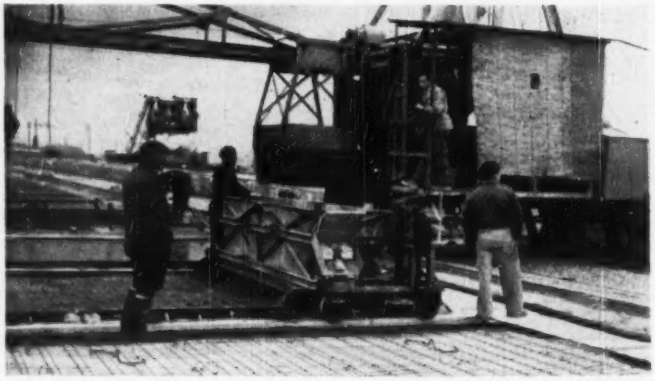
The canal has a bottom width of 262 ft—top width, 449 ft. It is 31 ft deep, and sides have a 3 to 1 slope. Vacuum concrete slabs—chosen as a semi-flexible lining to be set on the alluvial deposits—are 24.6 ft long, 10 ft wide and 3.5 in. thick.

Slabs are made at the rate of 120 per day in a plant working two 8-hour shifts. That means the plant is producing a slab every 8 minutes of the working day—and will have to do so for a total of 18 months to complete the job. Full swing production started in April, 1950.

Concrete is poured on casting beds from a track-mounted mixer. The number of these beds equals the daily production, 120. Fresh concrete is vacuum processed and slabs are unmolded 24 hours after pouring by a vacuum lifter. Use of the lifter greatly simplifies reinforcing steel by minimizing handling stresses. Finished slabs are hauled to storage on flat cars.

Work is being done by Electricite de France forces. Studies were made by the French Vacuum Concrete Co. of Paris in connection with Billner Vacuum Concrete Co. of Philadelphia, Pa.

ON CANAL SLOPES vacuum concrete slopes measure 24.6x10 ft and are 3.5 in. thick. They will cover 6,000,000 sq ft in all.



AT THE PLANT concrete comes from a track-mounted mixer to a mobile distributor for pouring. Casting rate has hit 120 slabs per day.

TRAPPED!

To the $5,000 Man who wants to make $10,000 or more a year

A year goes by quickly—so quickly that the average man is not discouraged to find himself at the end just about where he was at the beginning.

But, suddenly, middle-age arrives; he awakes to the startling realization that he has been *trapped* by mediocrity . . . by half-way success.

The big jobs and big salaries which only yesterday seemed possible of accomplishment now appear remote and unobtainable. The future that held great promise no longer exists.

Look back over your own business career. Have you made as much progress as you are capable of making? Are you adding to your knowledge of business fundamentals each day? Or are you, too, lying back contentedly waiting for the success that will never come?

Men who sincerely want to get out of the "trap" can turn to the Alexander Hamilton Institute with great hope. Over a period of thirty-nine years, the Institute has re-kindled the ambitions of thousands of men, and has enabled them to turn their dreams of success into actual achievements.

Send for "Forging Ahead in Business"

It is one of the fascinating delights of business to see what a single year can do in the lives of ambitious men working under systematic guidance. The Institute works no miracles, but it does provide a program so complete and scientific that each day carries subscribers closer to their goal.

That program is outlined in a 64-page booklet aptly titled "Forging Ahead in Business". It was written for mature men only; men who seek—not a magic formula—but a sound, realistic approach to the problems they face in trying to improve their positions and increase their incomes.

There is no charge for "Forging Ahead in Business" for the simple reason that it is worth only what you make it worth. Some men glance through it, and toss it aside. Others have found a fortune in its pages.

If you are willing to devote one short evening to the study of a plan that has meant rapid progress to thousands of executives, send for "Forging Ahead in Business" today. Fill out and return the coupon below; your complimentary copy will be mailed to you promptly.

ALEXANDER HAMILTON INSTITUTE
Dept. 733, 71 West 23rd Street New York 10, N. Y.
In Canada: 54 Wellington Street, West, Toronto 1, Ont.

ALEXANDER HAMILTON INSTITUTE
Dept. 733, 71 West 23rd Street, New York 10, N. Y.
In Canada: 54 Wellington Street, West, Toronto 1, Ont.
Please mail me, without cost, a copy of the 64-page book—
"FORGING AHEAD IN BUSINESS."

Name.....
Firm Name.....
Business Address.....
Position.....
Home Address.....

SHOCK STRENGTH

Without shock strength—or, for that matter—without all of the strength factors listed opposite—no pipe laid 100 years ago in *city streets* would be in service today. But, in spite of the evolution of traffic from horse-drawn vehicles to heavy trucks and buses—and today's vast complexity of subway and underground utility services—cast iron gas and water mains, laid over a century ago, are serving in the streets of more than 30 cities in the United States and Canada. Such service records prove that cast iron pipe combines all the strength factors of long life with ample margins of safety. No pipe that is provably deficient in any of these strength factors should ever be laid in city streets. Cast Iron Pipe Research Association, Thos. F. Wolfe, Engineer, 122 So. Michigan Ave., Chicago 3.

CAST IRON PIPE

Strength factors of Long Life !

No pipe that is provably deficient in any of these strength factors should ever be laid in city streets

SHOCK STRENGTH

The toughness of cast iron pipe which enables it to withstand impact and traffic shocks, as well as the hazards in handling, is demonstrated by the Impact Test. While under hydrostatic pressure and the heavy blows from a 50 pound hammer, standard 6-inch cast iron pipe does not crack until the hammer is dropped 6 times *on the same spot* from progressively increased heights of 6 inches.

CRUSHING STRENGTH

The ability of cast iron pipe to withstand external loads imposed by heavy fill and unusual traffic loads is proved by the Ring Compression Test. Standard 6-inch cast iron pipe withstands a crushing weight of more than 14,000 lbs. per foot.

BEAM STRENGTH

When cast iron pipe is subjected to beam stress caused by soil settlement, or disturbance of soil by other utilities, or resting on an obstruction, tests prove that standard 6-inch cast iron pipe in 10-foot span sustains a load of 15,000 lbs.

BURSTING STRENGTH

In full length bursting tests standard 6-inch cast iron pipe withstands more than 2500 lbs. per square inch internal hydrostatic pressure, which proves ample ability to resist water-hammer or unusual working pressures.

SERVES FOR CENTURIES

MUNICIPAL AFFAIRS

HUB OF THE UPPER MIDWEST—Here is Minneapolis on the Mississippi River. With a 1950 population of 517,410, it is now the seventeenth U. S. city in size.

Minneapolis, Minn.—City of lakes and parks

With the new $10,000,000 Upper River Harbor project under way, Minneapolis looks forward to becoming one of the country's busiest river ports. Already it claims to be at the head of Mississippi River navigation as it maintains a regular barge service to and from New Orleans during the navigation season.

St. Anthony Falls, which has interfered with navigation nevertheless has been the source of power for the huge milling industry whose products are shipped all over the world. Located at the falls is the hydraulic laboratory of the University of Minnesota.

Minneapolis has 147 beautifully landscaped parks, providing an acre of park for every 96 of its more than half a million inhabitants.

The parkway system almost completely encircles the city.

Expressways uppermost in many city councils

In a number of important cities at the present time consideration of plans for expressways is taking precedence over other traffic matters. News items along these lines from Detroit, St. Louis, Milwaukee, and Atlanta include these:

Detroit—The John C. Lodge and Edsel B. Ford expressways, parts of which are under construction, are being built without the 50-to-60 ft center mall, designed for future rapid transit facilities. Engineers in conference from the city, state, county and U. S. Government have agreed to omit expressway malls on these two projects.

The Rapid Transit Commission favored the additional right-of-way. Inclusion of rapid transit space is urged for the second part of the Lodge and Ford Expressways. This would slow up construction two to three years.

The additional land required for expressway malls would add from $15,000,000 to $20,000,000 to the $140 million cost of these projects.

St. Louis—Three alternate routes for continuation of a 6-lane expressway highway connecting downtown St. Louis and U. S. Highway 66 have been proposed by Malcolm Elliott, director of the comprehensive municipal highway survey. The routes would have their western terminus at Lindberg Boulevard in St. Louis County and have their eastern end at 12th Boulevard and Gravois Ave. The estimated costs of the three alternate routes are No. 1, $38,841,000; No. 2, $38,011,000; and No. 3, $33,816,000.

Milwaukee—After inspecting the expressway construction at Detroit, a number of Milwaukee city and county officials and civic leaders have urged a quick start on Milwaukee's proposed system of 35 miles, estimated to cost $129,450,000. Supervisor G. H. Kops said that Milwaukee should start its expressway program right away and that the county board should take over the leadership. He added:

"By putting it on a county-wide basis, I think we could overcome the difficulties that may be encountered in the suburbs."

"The No. 1 task for highway authorities today is to provide safe, fast and convenient facilities for the movement of motor vehicle traffic into, through, and around our cities and urban areas."—American Road Builders Association

Atlanta, Ga.—Attorney General Eugene Cook has ruled that the cost of relocating public utilities in connection with the construction of Atlanta's new north-south expressway must be borne by the sponsors of the project and not by the utilities. The relocation cost probably will total $1,000,000.

The ruling is important in that generally the state, under its police powers, could require a utility to bear the cost of "reasonable change" of its facilities resulting from highway or street construction.

However, Mr. Cook said that the expressway is primarily part of an interstate military federal highway and not just a local traffic artery. Also that the relocations are more than reasonable changes.

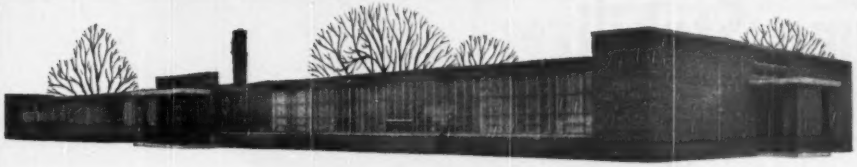
Massachusetts authorizes water shut-offs

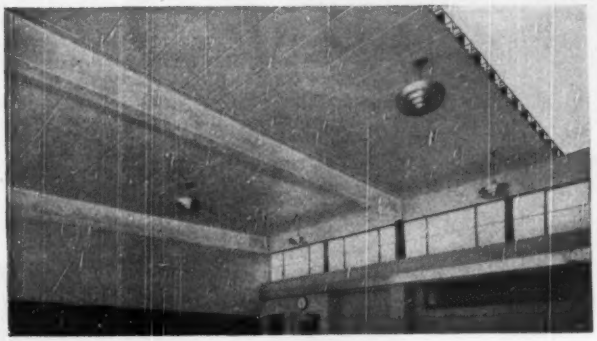
The Massachusetts Department of Public Health has authorized Town Manager R. E. Layton of Danvers at his discretion to curtail use of water or to shut it off on the premises where there is no voluntary compliance with requests to conserve the community's shrinking supply. This is the first departmental ruling of the kind in many years. Regulations were imposed on the citizens July 15, and much water has since been saved. A 42-day supply remains in the town's reservoirs, which also supply about half of the neighboring town of Middleton. (ENR Aug 24, page 26).

Meanwhile, in nearby Wakefield, a "state of emergency" has been declared by the Department of Public Health. Water shortage here may be solved by Metropolitan District Com-

(Continued on page 61)

How to Slash the Cost of Structural Steel in Schools





Bendle School at Flint, Michigan, where the *two* flat surfaces of "AD" Panels form the ceilings and roof. *Architect:* Bennett & Straight, Dearborn. *Contractor:* Perry-Root Company, Flint.

Lower illustration shows how side laps interlock to form smooth, flat ceilings, strong, flat roof. Panels standardized in 16" width. Depths 3", 4½", 6" and 7½". Gauges 16 to 13.

There are fewer purlins here . . . less expense. In many cases, both purlins and girders are completely eliminated. Just lay new, long-span Fenestra* "AD" Panels on supporting masonry . . . one of the quickest, strongest, most economical ways to build a one-story school.

Quickly laid without special skills, these good-looking lightweight metal panels interlock to give you a smooth, finished *ceiling*. So builders paint instead of plaster. If you wish, Fenestra "AD" Panels can be perforated and backed with an insulating element to soak up sound.

"AD" Panels form the *roof*—over the strong, flat surface, roofing goes on quickly, smoothly.

There's a low-cost, beautiful one-story school—clean-lined and easy to maintain. Economical to heat. Noncombustible.

Get the whole story about this remarkable, new method of school building. And the product that makes it possible . . . the multi-purpose panel package that is structural material, finished ceiling, strong, flat roof, built-in acoustical treatment, safety measure against fire—all in one.

Call your nearest Fenestra representative, listed in the yellow section of your phone book, or mail the coupon.

*Trademark

Fenestra

Panels • Windows • Doors

"Use Our 25 Years' Experience in Metal Panel Engineering"

DETROIT STEEL PRODUCTS COMPANY
Dept. ER-9, 2277 E. Grand Boulevard
Detroit 11, Michigan

Please send me, without obligation, information on Fenestra Building Panels.

Name_____

Company_____

Address_____

Less SIDESWAY, greater STABILITY with a Fruehauf Dump Stabilizer!

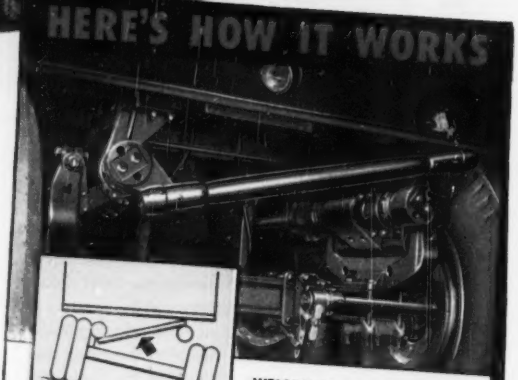
HERE'S a real hauling partner for any construction job. The Fruehauf Dump Trailer with Gravity-Tandem *Stabilized* Suspension. 23 cu. yd. capacity. A power coupler hoist mechanism that eliminates the need for troublesome hydraulic hoses, vertical 2-speed Supports for fast pickups and many other Fruehauf exclusives make *this* Dump Trailer a standout on any job.

No matter what your hauling problem may be, there's a Fruehauf for the job. Low side, high side, they're both in the Fruehauf line. Each unit packed with performance tested features found in no other dump Trailer.

In addition, Fruehauf engineers will gladly help you with custom designed units to meet special problems.

For complete information on the Fruehauf Trailer for *your* job, write Fruehauf Trailer Company, DETROIT 32, LOS ANGELES 58. IN CANADA: WESTON, ONT.

HERE'S HOW IT WORKS

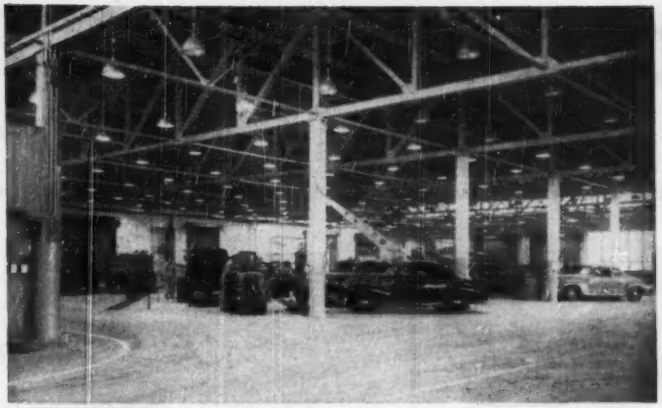


WEIGHT IS TRANSFERRED THROUGH STABILIZER BAR TO OUTSIDE TORSION-BAR.

This stabilizer bar is an "equalizer" that transfers weight from the low side of the tandem unit to the high side... spreading the weight over all four wheels instead of the two low ones. It is valuable, too, in equalizing load shifts while under way, preventing sidesway and dangerous tip-overs on the road. Torsion-bar suspension plus stabilizer, a Fruehauf tandem axle exclusive, combine to permit dumping of loads almost anywhere.

FRUEHAUF Trailers

WORLD'S LARGEST BUILDERS OF TRUCK-TRAILERS



ENGINEERING SHOP—This new $600,000 engineering department shop building has been placed in operation at Seattle, Wash. Equipment layout is expected to reduce materially the cost of maintaining city equipment, according to City Engineer R. W. Finke. Trucks and cars enter near one corner of the one-story 250x240-ft. concrete structure, leave at the opposite corner. One end of the building is reserved for work on cars and light trucks while five bays in the center of the structure accommodate heavy equipment. A 5-ton crane and a 2-ton fork lift move engines and other heavy parts as required to the shops ranged along the sides of the building. These shops include paint, blacksmith, carpenter, machine and broom repair. The paint shop has one truck and two car booths, in which the temperature can be raised to a point where the paint will dry overnight. Caterpillars have their own entrance, with specially reinforced floor to withstand their weight. Lunchroom, showers, lockers, etc., are located on a balcony. The engineering department's automobile and truck-repair shops maintain some 670 pieces of equipment, ranging from power lawn mowers to power shovels.

mission arrangements to draw 720,000 gallons per day from the Stoneham distribution system. This action was taken when it was found that Crystal Lake, Wakefield's main source of water supply, is down 35 in. below high water level. The amount to be borrowed, 720,000 gallons per day, is about half of Wakefield's normal consumption.

More Milwaukee schools—The school board at Milwaukee, Wis., has adopted an $18,200,000, five-year school building and modernization program, a large proportion of the projects being listed as immediate needs.

Big shopping center—Plans to build a huge shopping center, to cost eventually between $15,000,000 and $20,000,000, in suburban Skokie, Ill., have been announced by Marshall Field & Co., Chicago department store. The company has bought 110 acres east of the new Edens superhighway now under construction. Preliminary plans provide for 1,000,000 sq. ft. of selling space in three main buildings and a double row of stores along a central mall. A shuttle bus service is proposed between the parking area for 6,000 cars and the shopping center, where automobiles will be prohibited.

Sewage treatment plan—A $4,500,000 secondary sewage treatment scheme has been proposed for municipalities in the Grand Valley region of southwestern Ontario. Representatives of ten municipalities gathered recently to hear A. E. Berry, chief sanitary engineer for the province, outline plans which, he said, were essential to reduce pollution of the Grand River. Dr. Berry was supported by Dr. J. T. Phair, Deputy Minister of Health for Ontario. The cost would be allocated among the various municipalities proportionately. Brantford and Kitchener would be the chief contributors.

Jackson improvements—By large majorities, Jackson, Miss., has voted $13,100,000 in a 7-point civic improvement program. Plans include $8,500,000 in school bonds; $2,000,000 for sewers; $500,000 municipal court building; $600,000 library; $250,000 community center; $250,000 parks and $1,000,000 for waterworks.

Smoke and smog survey—City Engineer R. W. Finke of Seattle, Wash., has recommended to the city council that it appropriate $15,000 for a smoke and smog survey by either the University of Washington or Washington State College as the basis for proposed anti-smoke legislation.

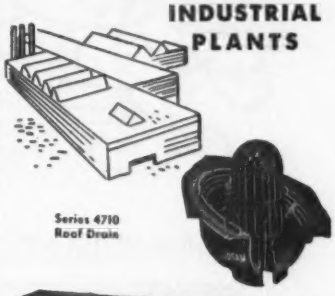
THERE'S ONLY 2 FACTS YOU NEED TO KNOW ABOUT DRAINS

Josam

...has the widest range of types and sizes of plumbing drainage products in the world. There's a Josam product for every plumbing drainage condition.

...is specified by more architects and engineers...and has its products installed in more buildings than all other makes combined.

INDUSTRIAL PLANTS



Series 4710 Roof Drain

Series 0310-5-R Ramp Drain

BRIDGES

Series 030-S Bridge Drain

JOSAM MANUFACTURING CO.

Main Sales Office, 360 Josam Bldg., Cleve. 13, Ohio
Manufacturing Division—Michigan City, Indiana

Representatives in all Principal Cities

JOSAM-PACIFIC CO., West Coast Distributors
San Francisco, California

JOSAM-CANADA LIMITED, Canadian Distributors
Toronto, Ontario, Canada

MAIL COUPON TODAY FOR PRODUCT INFORMATION

JOSAM MANUFACTURING COMPANY
360 Josam Building, Cleveland 13, Ohio
Please send me information on drains for

NAME

FIRM

ADDRESS

CITY ZONE STATE

IT'S LIKE PAYING FOR THE

SAYS

(1.) WHEN ACCIDENTS THREATEN YOUR BUSINESS OR HIT YOU WHERE IT HURTS

(2.) AND YOU HAVE TO PAY EXTRA FOR GETTING KICKED AROUND, THAT'S

(4) AND DOES IT AT NO EXTRA CHARGE WITH EVERY BUSINESS POLICY!

(5) AND HELPS REDUCE YOUR AT THE SAME TIME....

AMERICAN MUTUAL

...the first American liability insurance company

© 1950 AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

PRIVILEGE OF BEING KICKED!

MR. FRIENDLY

HIGH PREMIUMS
INSULTS TO INJURIES!

(3) WHEN AMERICAN MUTUAL HELPS SHRINK YOUR DANGERS TO A MINIMUM!

IT'S LIKE GETTING PAID FOR BEING HAPPY!

And that, sir, is exactly what we did for a South Carolina textile mill when we helped them reduce premiums from 46% above average to 10% below average . . . saving them 38.4% on premiums alone! It's just one of 40 cases we'd like to show you at your convenience . . . why not phone your local Mr. Friendly. (Listed in telephone directories in principal cities.) It could be the most profitable call you've ever made!

MAIL THIS COUPON NOW—WITHOUT DELAY!

PREMIUMS

A M

Dept. O-99, American Mutual Liability Insurance Company
142 Berkeley Street, Boston 16, Massachusetts

Without obligation, please *rush* to me information on *The All-American Plan* so that I may be richer and happier!

*Name*_____

*Street*_____

*City*_____ *State*_____

MEN AND JOBS

Frederick H. Weed, for the last four years engineer in charge of planning and developing the new metropolitan water system for Miami, Fla., has become an associate in the firm of Buck, Seifert and Jost, consulting engineers, New York City. Mr. Weed has a background of more than 30 years in water works, sanitary and power engineering. He was chief of the Water Supply Section of the War Production Board's Water Division during the World War II and was Army officer in charge of operation of water works, sewers and sewage disposal at Camp Dix, N. J., during World War I. He is a graduate of Dartmouth and the Thayer School of Engineering.

Lucien Dansereau, consulting engineer, of Montreal has been appointed a member of the International Joint Commission, and **Gen. A. G. L. McNaughton,** now a member of the commission, is to become chairman of the Canadian section.

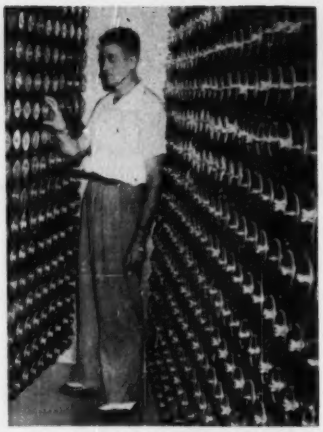
Jerome Fertig, Bureau of Reclamation engineer who headed investigations that led to the development of the Cachuma Dam and other projects, has retired after 29½ years of service. He was graduated from the University of Colorado in 1903 and joined the bureau in 1912 as construction engineer on the Uncompaghre project. He headed construction on the Ochoco and Grants Pass irrigation district projects in Oregon. He had charge of rehabilitating the canal system of the Bitter Root Irrigation District, Hamilton, Mont. In 1941, he was assigned to the bureau's investigation of Santa Barbara County, Calif., water resources. His findings resulted in the Cachuma project.

David Auld, superintendent of the District of Columbia Water Division, has been designated deputy director of sanitary engineering for the district. He will relieve Ellwood Johnson, retiring Oct. 1. Harold A. Kemp is director of sanitary engineering.

I. D. Woodward, city engineer of Riverton, Wyo., for nearly 25 years, has resigned to enter private practice.

Paul Beerman, former assistant hydraulic engineer of the water department of San Diego, Calif., has been appointed hydraulic engineer to fill the place of the late Fred D. Pyle.

(*Continued on page 66*)

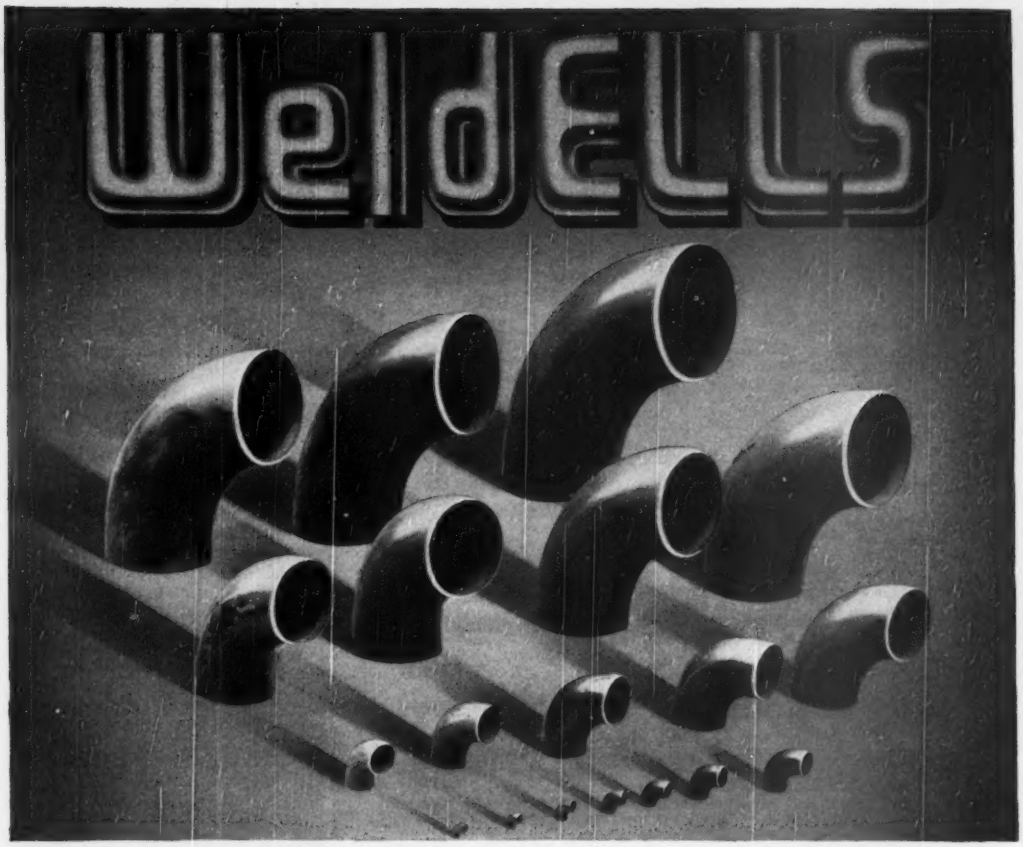


Russell E. Arney, assistant superintendent of the Washington, D. C., refuse transfer station, is shown examining some of the 3,400 activated carbon-filled canisters which soak up odors from the garbage and rubbish.

Henry C. Wolfe of the Corps of Engineers, U. S. Army, has retired. He was appointed as Second Lieutenant, Corps of Engineers, on June 17, 1918, and was sent to France to serve in the 535th Engineers. He rose to captain. At the start of World War II as a lieutenant colonel he was assigned to the Engineer Amphibian Com and was subsequently given command of the 1st Engineer Special Brigade which he took to Africa. He also served as Commanding General of the Invasion Training Center in North Africa and Italy and as Chief Engineer, 6th Army Group in France and Germany.

He plans to join Mills, Petticord, and Associates.

Pile driving is under way for a new California education department building in Sacramento, the first structure to be started on the capital city's mall. Checking plans for the work are, left to right, C. W. Blackburn, associate construction superintendent for the state; Hamilton Higday, construction superintendent of the George Pollock Co., Sacramento; Carl C. Cramer, district superintendent of the Raymond Concrete Pile Co., Oakland, and Gene Dougherty of the paving division of the Brighton Sand and Gravel Co., Sacramento.



Family Group . . . *proud of its size . . . and traditions*

Large group though it is, you see here only one branch of the world's largest family of fittings for pipe welding.

It is simply the stock sizes of long-radius WeldELLS in a single weight and material — merely a small fraction of the enormous line that includes more types of fittings, in more materials, more weights and more sizes than any other line.

Important though the breadth of the WeldELL line is to every man who designs or erects piping, still more important is the significant fact that the WeldELL family grew to this size because nothing less could meet the demand for fittings of WeldELL quality and uniformity to satisfy every conceivable piping condition.

Yes, there is a Taylor Forge Fitting for every purpose. From the smallest to the largest, every fitting in the WeldELL line shares the principle of sound engineering design and job-speeding utility that Taylor Forge has consistently applied for half a century.

Mail the coupon for Taylor Forge catalog.

TAYLOR FORGE

TAYLOR SPIRAL PIPE is again promptly available in a broad range of sizes and thicknesses. Coupon brings new Spiral Pipe Bulletin 493.

TF

TAYLOR FORGE & PIPE WORKS
P. O. Box 485, Chicago 90, Illinois
Offices in all principal cities: *Eastern Plant:* Carnegie, Pa.
Western Plant: Fontana, Calif.

☐ Please send Catalog 484 covering welding fittings and forged steel flanges.
☐ Send Bulletin 493 covering Taylor Spiral Pipe and related fittings.

NAME_____

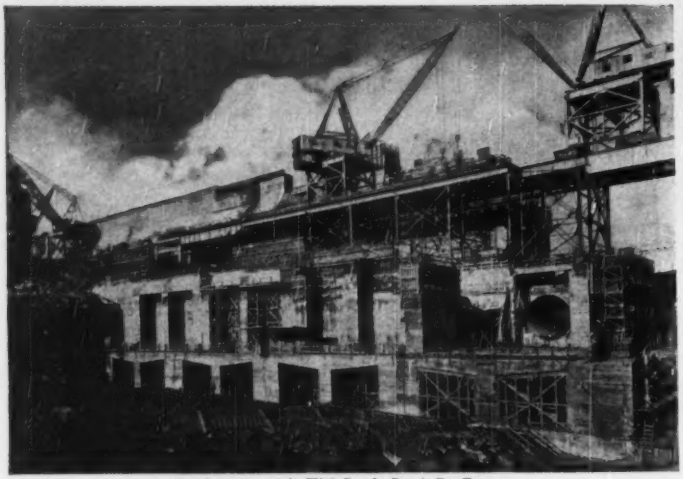
POSITION_____

COMPANY_____

STREET ADDRESS_____

CITY_____ ZONE____ STATE_____

Mail to Taylor Forge & Pipe Works, P. O. Box 485, Chicago 90, Ill.
"614-0950"



Powerhouse area of the TVA's Douglas Dam in East Tennessee.

FIR-TEX

ABSORPTIVE FORM LINER

Produces Smoother, Harder Concrete on

DOUGLAS DAM in Tennessee

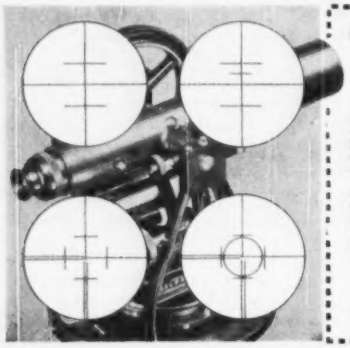
FIR-TEX Absorptive Concrete Form Liner is a highly absorptive felted board, with a chemically treated surface which resists bonding. The mechanical vibration of concrete increases the tendency of air and water bubbles to float to the surface and to the face of the mass. When a non-absorptive form liner is employed, these bubbles have no avenue of escape and consequently remain to become voids in the face of the concrete.

The action of the Fir-Tex Liner is like that of a vacuum cleaner. It absorbs all excess air and water adjacent to surface. The removal of bubbles permits the cement to flow into those spaces so that this surface sets solidly into a smooth attractively textured mass of extreme density and resistance to moisture. This structural change in the concrete extends to a depth of about 1¼ inches from the face. Not only has the structure been given architectural beauty, but its weather resistance has been so greatly increased that eminent engineers have referred to its surface as "case hardened."

DANT & RUSSELL, INC.

Exclusive Distributors

Equitable Building, Portland 4, Oregon



New, Improved Glass Reticles in Gurley Transits Speed Accurate Sighting

Metallic filaments deposited on Gurley glass reticles are sharply defined—equally visible against either very bright or dark backgrounds. Short stadia lines are easy to identify, prevent confusion with regular cross lines.

They're the quick-reading reticles, available in several patterns in Gurley Transits, to suit every surveying requirement and climatic condition. Write today for Bulletin 50, W. & L. E. Gurley, Union Plaza, Troy, New York.

GURLEY

Scientific and Surveying Instrument Makers Since 1845

A. Norman Murray has been appointed regional planning engineer of the Bureau of Reclamation's Region 2, Sacramento, Calif., replacing Stanley A. Kerr, retired. A graduate of Washington State College in civil engineering, Murray's work outside the Bureau includes surveying on the Colorado River Aqueduct, engineering on dam construction in Nebraska, levee construction in Missouri, and research and development of military bridge equipment, for which he was awarded the Legion of Merit.

William Hudson Carper, city manager at Burlington, N. C., since July 15, 1947, has been named city manager of Raleigh, N. C., succeeding Roy S. Braden, who resigned recently. Carper got his civil engineering degree from Virginia Polytechnic Institute in 1938, after which he served as city engineer at Fredericksburg, Va., for two years and then went to Culpepper, Va. as city manager from 1940 to 1943. He served the next two years as city manager of Clifton Forge, Va., and then was with the Virgina State Planning Commission until he went to Harrisonburg, Va., as city manager in 1946, remaining there until he took the Burlington job.

Miles Nelson Clair has been elected president of the Thompson & Lichtner Co., Inc., Brookline, Mass., consulting engineers. A graduate of Drexel Institute and the Massachusetts Institute of Technology, where he taught before joining the company in 1925 as engineer in charge of testing and inspection, Mr. Clair became vice-president in charge of engineering in 1928. In 1930 he was elected first vice-president and treasurer. He has been identified with airport, sewerage and transit undertakings, building code work, and the American Concrete Institute, the American Standards Assn. and others.

Jose Rivera, director-general, Asociacion Mexicana de Caminos, has been appointed Central American representative of the International Road Federation. Mr. Rivera is a Mexican and was educated in Mexico and at Iowa State College. From 1928 to 1947, he was secretary of the Pan American Division, American Road Builders Association.

Clinton B. F. Brill is special consultant to represent DeLeuw, Cather & Co., Chicago engineers, in New England and to handle Central and South American interests of the firm. Colonel Brill was with the Corps of Engineers in headquarters of the 9th U. S. Army in Europe during World War II. For the last three years he has been in charge of technical activities of the IBEC Technical Service Corp.

John Banes of Raleigh, N. C., civil engineer from North Carolina State College, has joined the city public works department at Durham, N. C.

Deputy Premier and **Minister of Public Works Errick Willis** of the province of Manitoba has resigned.

Col. William Mills has assumed his duties as district engineer of the Walla Walla District, Corps of Engineers, at Walla Walla, Wash.

Francis M. Beam, assistant city building inspector at Durham, N. C. has resigned to become resident engineer for Robert and Co. of Atlanta, Ga. on a Wilmington, N. C. ports improvement project.

Elmer W. Becker has been appointed assistant superintendent of Milwaukee, Wis., waterworks. A civil engineer graduate of the University of Wisconsin, he has been employed in the water construction division since 1924 and has been in charge of design and construction of water main extensions since 1948.

HOW DO *YOU* FIND BEDROCK?

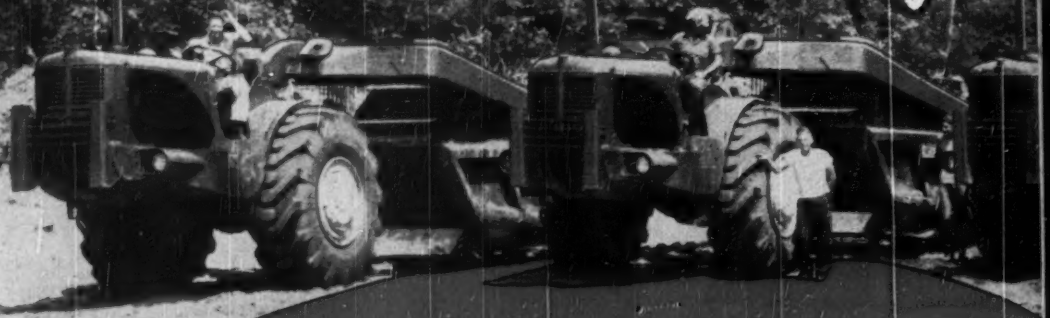
THERE IS AN EASIER WAY

with **CENTURY CONSTRUCTION SEISMOGRAPH**

Now you can locate bedrock and plot its contour in minutes instead of hours. To learn more about this new and PROVEN method of bedrock finding without detailed and costly drilling, write *1337 North Utica*

Century GEOPHYSICAL CORPORATION
TULSA, OKLAHOMA
EXPORT: 149 Broadway, New York

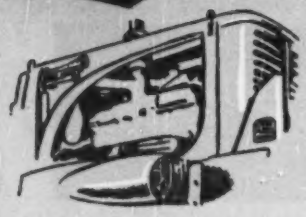
On the New Jersey



Heiliners keep schedules highballing . .

Shovel-loading a Heiliner bottom-dump unit on the New Jersey Turnpike. Capacity — 20 cu. yds. High clearance, sharp turning-radius, and easy steering keep costs down.

A few of the reasons your Heiliner operators move more dirt at less cost

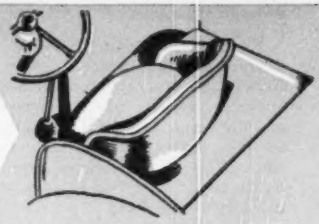


200-HP Cummins Diesel

High top speed (25 m.p.h.), plenty of lugging power. Compression release for quick starts.

Easy-handling Hydro-Steer

Makes steering effortless. You can turn the Heiliner with one hand in a 22-foot radius.



Comfortable Seat

Reduces operator fatigue, by absorbing the shocks in rough going.

Fleet of Heiliner 2C-800 Scrapers on the New Jersey Turnpike. Capacity of each — 18 cu. yds.

move more dirt, faster, at less cost!

On the 118-mile New Jersey Turnpike, soil conditions vary from heavy sand-clay through sandy marsh-land to clear sand. In tough going like this, Heiliners out-perform competitive units every time.

They carry 60% of the load on the drive wheels. This gives them exceptional traction — and that's why *they move more dirt faster, at less cost.*

Here's the proof (based on New Jersey Turnpike time studies): Heiliner scrapers, with their bonus-loading design, pick up heaped loads in an average of 55 seconds . . . complete 5000 ft. round-trips from borrow to fill in 5½ minutes . . . and maintain their own haul-roads at the same time. Brother, that's highballing!

2C-800 Heiliners are available with either an 18-cu. yd. scraper or a 20-cu. yd. bottom-dump wagon (both are interchangeable). Heiliner scrapers and bottom-dump wagons are both used on the New Jersey Turnpike to meet schedules and avoid penalties. Have your Heil road-machinery distributor show you why Heiliners move more dirt faster, at less cost!

Mail this coupon today for NEW Catalog — just off the press!

THE HEIL CO.

Dept. 190, 3001 West Montana Avenue, Milwaukee 1, Wisconsin
Factories: Milwaukee — Hillside, N. J.

District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle

THE HEIL CO.
Dept. 190, 3001 W. Montana Ave.
Milwaukee 1, Wisconsin

I am interested in moving more dirt faster, at less cost. Please send me new catalog showing cost-cutting advantages of Heiliner design.

Name_____ Title_____

Company_____

Company Address_____

City_____ (__) State_____

8-119

EDUCATION and RESEARCH

Dr. J. C. Warner

New president and 50th anniversary at Carnegie

Carnegie Institute of Technology on Oct. 27-28 will celebrate its 50th anniversary and inaugurate its fourth president—John Christian Warner.

Doctor Warner succeeds Robert E. Doherty, who retired a few months ago. In the last 25 years he has taught and written books; he has increased scientific knowledge; and, during World War II, he contributed valuable scientific and administrative service to America. Now, after rising from instructor of chemistry through the academic ranks to professor, head of the department and dean of graduate studies in the College of Engineering and Science, he becomes President of the institute.

Engineering graduates to be in greater demand

The demand for engineering school graduates, especially design engineers, has been stimulated by the start of industrial conversion to war production and by the impending draft of manpower for military service, according to Harold L. Minkler, director of placement at the Illinois Institute of Technology.

Henry H. Armsby, associate chief for engineering education in the U. S. Office of Education says that starting in 1953, there will be a shortage of engineering college graduates to fill the needs of the rapidly expanding industrial economy.

J. C Hanes, new chairman of Rutgers C.E. dept.

James C. Hanes has been appointed chairman of the department of civil engineering at Rutgers University, New Brunswick, N. J.

During the last six years, under the sponsorship of the Institute of Inter-American affairs, Professor Hanes drew up plans for water supply and sewerage systems, hospitals and health centers, and drainage projects to help control malaria in Latin American countries.

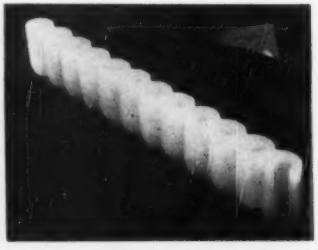
Before entering the institute's service, Professor Hanes had served as instructor, adjunct professor and associate professor of civil engineering at Virginia Military Institute. He was graduated from V.M.I. in civil engineering in 1925 and in 1937 received the Master of Science degree in sanitary engineering from Virginia Polytechnic Institute. Joining the I.I.A.A. in 1944, he served as sanitary engineer in Mexico from 1944 to 1947, as associate chief of staff in Chile from 1947 to 1948, and as chief of staff in El Salvadore for the last two years.

Microscopic research for better concrete

Research work on cement now in progress at the National Bureau of Standards uses optical (microscopic) methods to determine what happens to cement during early stages of hydration especially in the first three days of curing.

Particular attention is being directed to the effects of integral additions of calcium chloride on cement hydration.

Research Associate Lewis A. Tomes, of the Calcium Chloride Association, has developed a new mold for holding specimens. Made of paraffin wax, it retains cement specimens for definite curing periods, after which the specimens are carefully cross sectioned. The exposed faces are then polished for microscopic examination. Researchers hope to establish rates of hydration and find an explanation for some of the physical changes that take place in the curing process.



WAX CYLINDERS AID CEMENT STUDY—These wax cylinders are molds for holding cement specimens for optical examination during the early and critical stages of curing.

This research is a jointly sponsored effort of three scientific groups toward study of the fundamentals of curing cement. They are the National Bureau of Standards, Committee 612 on "Curing of Concrete" of the American Concrete Institute, and the Calcium Chloride Association.

Mr. Tomes is working under the active guidance of R. L. Blaine, chief of the Concreting Materials Section of NBS, and with technical assistance of its members. Herbert Insley, chief of the Mineral Products Division of NBS, is directing the present work, and Harold F. Clemmer, engineer of materials for the Washington, D. C., Division of Highways, is project coordinator.

Educational Notes

Alabama to Louisiana—Thomas M. Lowe, for 11 years head professor of civil engineering at Alabama Polytechnic Institute, has resigned to become director of the School of Hydraulic Engineering and head of the department at Louisiana State University, Baton Rouge.

Airphoto interpretation—At the recent special short course on airphoto interpretation of soil patterns at the school of civil engineering and engineering mechanics and the technical extension division, Purdue University, 30 states and 15 universities were represented. Highway departments sent 18 men, and the Corps of Engineers 30.

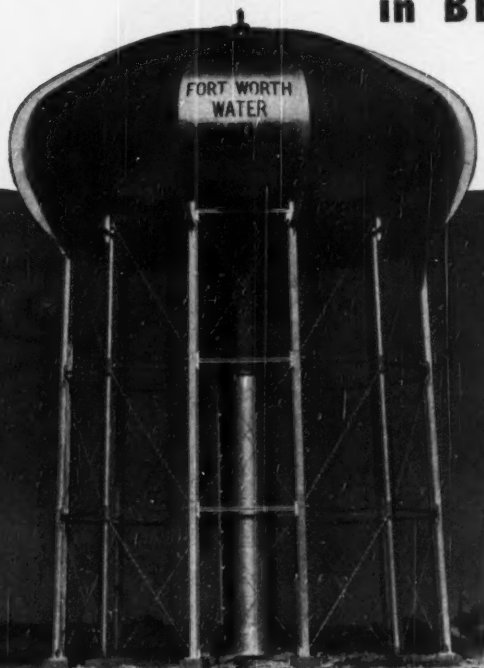
R.O.T.C. again—At the School of Mines and Technology, Rapid City, S.D., there will be a new Reserve Officers' Training Corps engineers' unit this fall. It will be under Col. Gilbert E. Linkswiler.

Sanitary engineering advice—J. E. McKee, associate professor of sanitary engineering at the California Institute of Technology, has gone to Germany to make a survey of German water and sewage works. He is being sent under a program of cultural exchange of American specialists and will also serve as adviser to the Public Health and Welfare Branch of the Office of the High Commissioner for Germany. His advisory work will relate to sanitary engineering and environmental sanitation in the public health work of the new West German government.

(*Continued on page 73*)

"Signposts" of Progress

in BETTER WATER STORAGE

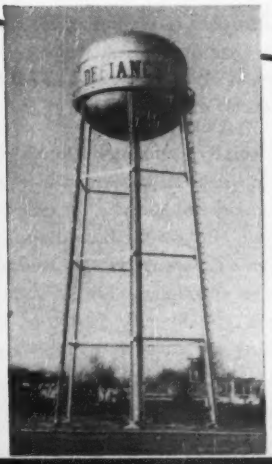


Elevated Steel Tanks

by

PITTSBURGH
·DES MOINES

Dependable water service for the progressive community is marked with distinction by P-DM Elevated Steel Tanks. Handsome in appearance, efficient in performance, economical to use and maintain, Pittsburgh-Des Moines Tanks are always a sound investment. *Write for our latest Water Storage Brochure.*

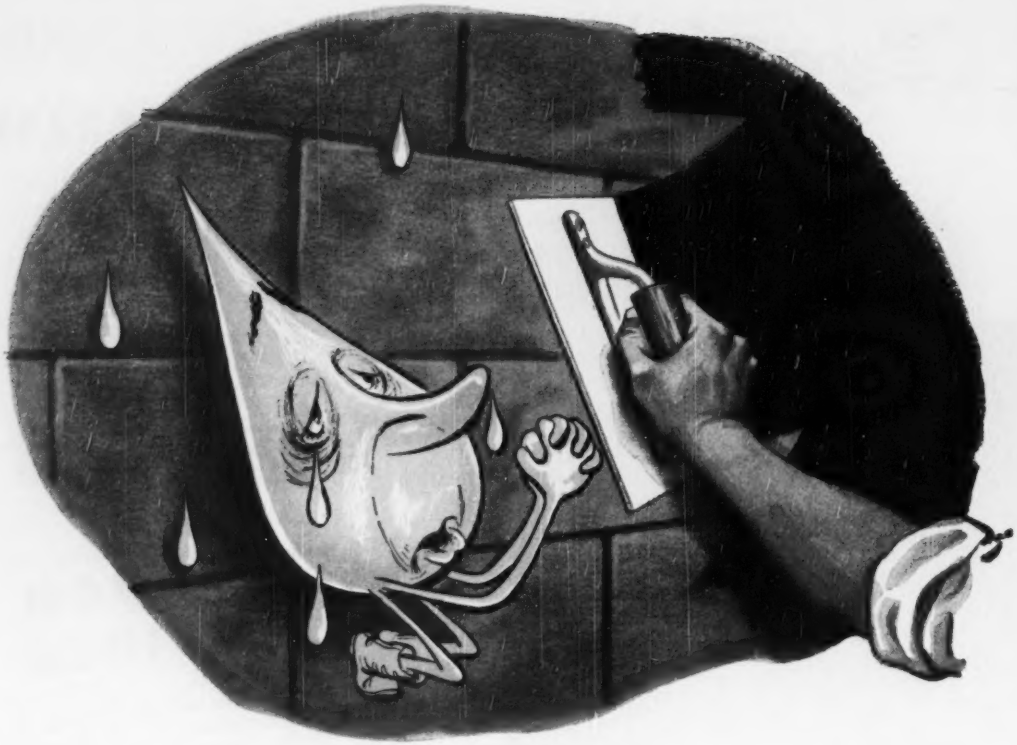


PITTSBURGH · DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH (25)	3414 Neville Island	DES MOINES (8)	915 Tuttle Street
NEW YORK (7)	Room 916, 270 Broadway	DALLAS (1)	1219 Praetorian Bldg.
CHICAGO (3)	1216 First National Bank Bldg.	SEATTLE	922 Lane Street
	SANTA CLARA, CAL.	621 Alviso Road	



How to Humiliate Humidity...

There are few intruders more persistent than unwanted moisture. One of the best ways to bar the door against it is to specify Flintkote Trowel Mastic on the interior face of exterior walls.

Here is a list of specially formulated asphalts for the many different applications necessary in moisture control. Cutbacks and emulsions . . . mastics, semi-mastics and fluids . . . hot-applied, cold-applied . . . fibrated, non-fibrated . . . spray-, brush-, and trowel-applied . . . whatever the characteristics, you can be certain that when you specify Flintkote, you're getting high quality products *especially developed* for your needs.

No matter what the job . . . above grade, or below . . . inside or out . . . you get proven performance when you specify the Flintkote line. It's a really effective way to humiliate humidity.

FLINTKOTE PRODUCTS FOR PROTECTION AGAINST WATER AND DAMPNESS

ASPHALT PRIMERS • ASPHALT CUTBACK COATINGS TROWEL MASTICS • SEMI-MASTICS • HYDRALT* EMULSION PROTECTIVE COATINGS • CAULKING COMPOUNDS • ASPHALT SATURATED MEMBRANE • SPANDREL CLOTH

Complete specifications and application data are available. Write for them today.

*Reg. U. S. Pat. Off.

THE FLINTKOTE COMPANY, *Industrial Products Division*
30 Rockefeller Plaza, New York 20, N. Y.
Atlanta • Boston • Chicago Heights • Detroit • Los Angeles
New Orleans • Washington • Toronto • Montreal

FLINTKOTE *Products for Industry*

MAURICE NELLES, engineering and research manager for the Allen Hancock Foundation, University of Southern California, has been named professor of engineering research and director of the Engineering Experimental Station at Pennsylvania State College.

Prior to joining the University of Southern California staff, Dr. Nelles was with the Union Oil Co., then with the Riverside Cement Co., and later was an engineer with the Henry Kaiser Co. From 1940 until 1946, he was associated with Lockheed Aircraft Corp. as senior research engineer.

During the last four years Dr. Nelles has worked on the development of scientific equipment for the University of Southern California Marine Laboratory Shop. At Penn State, he will succeed F. G. Hechler, who retired last December after 27 years of service.

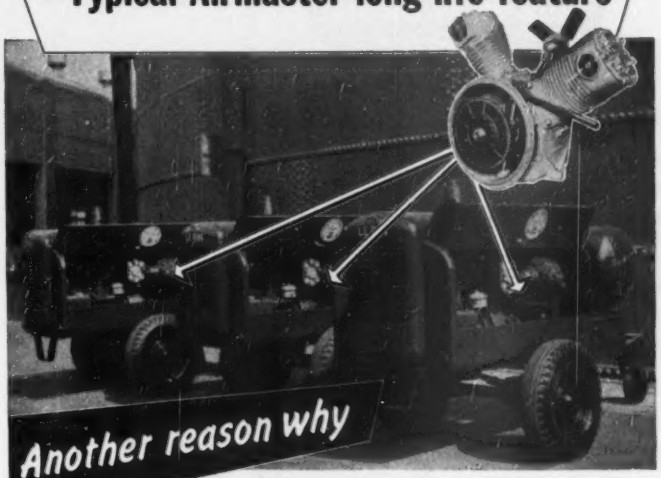
Assistant professor—George P. Hanna, director of the Bureau of Sanitation of Syracuse, N. Y., has resigned to accept appointment as an assistant professor of civil engineering at Syracuse University.

Rat-borne disease—A field training course in rat-borne disease prevention and control will be held by the Communicable Disease Center, Public Health Service in Atlanta, Ga., Oct. 2-20. Environmental sanitation will be stressed as one of the most important methods of both rat and insect control.

Graduate courses—Evening graduate courses this fall at the Institute of Transportation and Traffic Engineering, University of California include these: Highway Planning and Economics, Traffic Engineering Characteristics, and Highway and Airport Surfaces.

LE ROI

300% Overload Rating on Clutch —Typical Airmaster long-life feature



Le Roi Airmaster Compressors produce more air for less money

WHEN you buy a Le Roi Compressor, the pay off is in *extra* service hours. Le Roi's can take it. For example, the 300% overload rating on the clutch provides protection against on-the-job failure.

You find other extra margins of safety — extra sturdy running gear, solid protective housing, heavy-duty engine-compressor units — that show up in *extra* service hours.

Be sure to use a compressor that won't let you down—that produces more air for less money. Sizes from 60 to 600 Cfm. Ask your distributor for more about Le Roi's "long-life" design or write us for bulletins that tell the story.

— and Le-Roi-Cleveland air tools cut costs still more

Experienced distributors everywhere to give prompt service on the job!

C-124

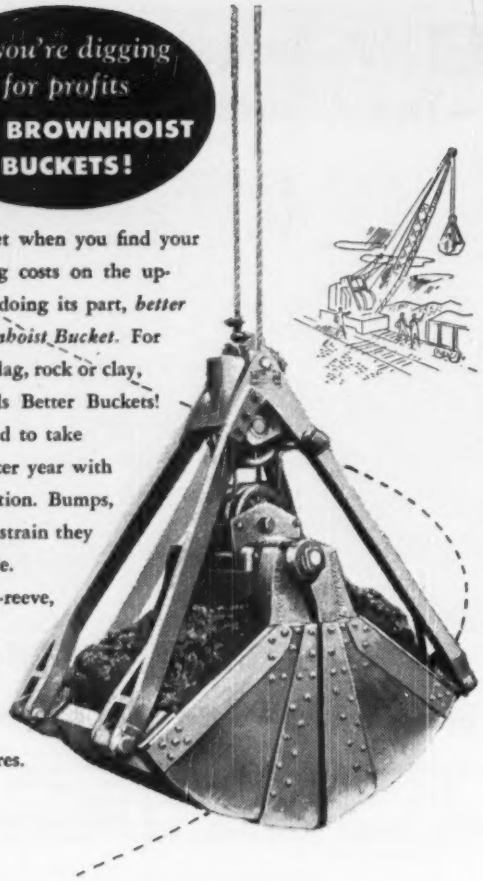
LE ROI COMPANY

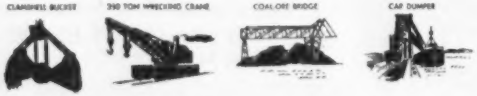
MILWAUKEE 14, WISCONSIN

NEW YORK • WASHINGTON • CLEVELAND • BIRMINGHAM • TULSA • BUTTE • SAN FRANCISCO

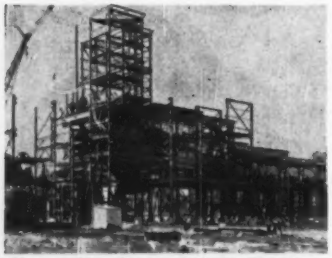
If you're digging for profits
BUY BROWNHOIST BUCKETS!

Check your bucket when you find your materials handling costs on the upgrade. If it isn't doing its part, *better change to a Brownhoist Bucket.* For coal, ore, sludge, slag, rock or clay, Brownhoist Builds Better Buckets! They're engineered to take full bites, year after year with trouble-free operation. Bumps, shocks, stress and strain they take in their stride. Available in rope-reeve, power wheel and link type. *Write for latest catalog* of Brownhoist Buckets and features.





INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICH.



Pleasant View Mine coal tipple, West Kentucky Coal Co., Madisonville, Ky. Steel by International.

Maybe you'll never need a steel coal tipple . . .

But if you do, International Steel will furnish it. We can fabricate in steel anything you need for your steel building requirements. Whatever you are building — office buildings, industrial plants, commercial structures — whatever you need — stairs, girders, trusses, or special steel buildings — International Steel is your best source of supply. Write today — tell us your needs.

INTERNATIONAL STEEL CO. 1803 EDGAR ST. • EVANSVILLE 7, IND.

OBITUARY

Landon Garland Smith, 69, civil engineer, with the Engineering Corps, Mobile District, died recently. He was a graduate of the University of Alabama engineering school and had previously been connected with the Alabama Highway Department, and served with the Engineers Corps during World War 1.

T. H. Banfield, chairman of the Oregon State Highway Commission from 1943 until the spring of this year, died Aug. 31 while on a trip to Rogue River in southern Oregon. In addition to his long service with the highway department, Mr. Banfield was a member of the Portland Dock Commission for 17 years. In March of this year he was appointed a member of the business advisory council of the United States Department of Commerce by Secretary Charles Sawyer. He was president of the Iron Fireman Manufacturing Co.

Charles Scearcy, 55, construction engineer, of Lancaster, Tenn., and formerly of Indianapolis, Ind., died Sept. 2.

George H. LeBoeuf, 50, president of the George H. LeBoeuf Co., Dayton, Ohio consulting engineers, died Aug. 31 in Hagerstown, Md.

William C. Penn, 65, civil engineer who pioneered the land surveys for establishment of the Aluminum Company of America in Tennessee, died Sept. 3 at his home in Maryville, Tenn.

Charles Whitaker, 70, vice-president and director of Winston Brothers Construction Co., died at Lake Minnetonka, Minn., Sept. 1. He had been connected with large construction projects in this country and abroad, especially railroads and power plant work.

William Callis West, 80, who retired in July as service engineering draftsman with the Virginia State Highway Department, died Sept. 3 in Richmond. He had been with the department since 1929.

Frank Eugene Collier, 45, civil engineer and for 11 years with the Project Cost Section of the Bureau of Power in the Federal Power Commission, died Aug. 25 in Washington, D. C. He was graduated from the University of Tennessee in 1929, and worked for a year with ALCOA in Canada.

From 1931 to 1939 he worked for the War Department in Nashville, Tenn., as an engineer.

Virgil C. Jackson, 64, chief right-of-way engineer for the Florida road department died at Tallahassee, Sept. 4.

Dorsey Conger Blakely, 66, a Lorton, Va., civil engineer, died Sept. 7 at Arlington, Va., following an automobile accident.

Chauncey De Pew Glascock, 55, Maryland Bureau of Public Roads Engineer for several years, died Aug. 29 in Mount Rainier, Md.

Hiram J. Wright, 83, Watertown, N. Y., contractor in the development of power and paper mill industries in Northern New York, died Sept. 7. During his career, he had been in charge of more than 30 major construction jobs in that section.

George W. Crouch, 76, for 50 years a building contractor in Watertown, N. Y., for many years, died Sept. 6. He was contractor for a number of major construction projects in the area and was active until recently.

Fay E. Shafer, 48, senior engineer assistant at the Nebraska department of roads and irrigation, died at Lincoln, Neb., Sept. 4.

John I. Byrum, 56, formerly a partner in the Smith Engineering Co., Kansas City, Mo., died Sept. 7 at Rogers, Ark.

George Clayton Hill, 70, former city building inspector at Winston-Salem, N. C., died Aug. 20. He obtained his engineering degree from Rensselaer Polytechnic Institute in 1906, and following graduation went to California and made surveys and designs for the dam systems for the Oakland, Alameda and Berkeley, Calif., water systems. He then became connected with the engineering department of the Southern Pacific Railroad and later did flood control work in Missouri. He returned to Fulton, N. Y., in 1911 as city engineer until 1919 when he moved to Washington, N. C. He went to Winston-Salem in 1923 as paving engineer in the public works department.

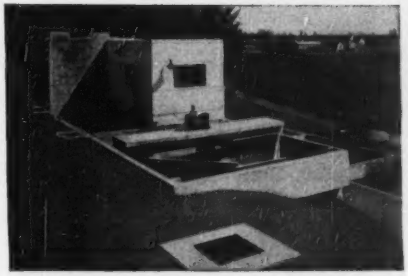
George W. Clark, 83, retired building contractor, died Sept. 7 in Rochester, N. Y. He entered the contracting business more than 50 years ago.

Frederic W. Doolittle, 67, a consulting engineer in New York City, died at Garden City, N. Y. Sept. 13. He taught at U. of Ill. and U. of Col.

Ideal for small communities, isolated institutions, outlying plants

YEOMANS SEWAGE TREATMENT PLANTS

. . . Activated Sludge Process or Biological Trickling Filter



The "PACKAGE" AERIFIER

Many small communities and outlying institutions, compelled to purify wastes but lacking an ample supply of diluting water, have found in the Yeomans "Package" Aerifier an ideal answer to a critical problem.

Compact, exceedingly efficient in purification, unique for low construction and operation costs, this activated sludge plant provides aeration and final sedimentation in a single concrete unit. Operation is as simple as possible, with supervision limited to routine check-up. Every installation includes final adjustment, initial tested operation, thorough training of operators and continuing counsel from Yeomans engineers.

"WATER-WHEEL" DISTRIBUTOR

Operating in conjunction with a primary sedimentation tank, the Yeomans "Water-Wheel" Distributor applies settled sewage to a trickling filter—with unfailing dependability. Sewage flows into the rotating trough, and is spread evenly on the filter bed through V-notches and spreader plates. The trough is actuated by a water-wheel and bevel gearing. Filter beds range from 5-foot to 25-foot diameters; and the entire area is effective for treatment. Continuous positive distribution is assured at all rates of flow—which does away with need for dosing chambers and siphons. There is none of the clogging and cleaning of spray nozzles often required with reaction distributors; and elimination of accessories saves as much as the entire cost of the complete Water-Wheel installation. Maintenance is extremely simple. Numerous Water-Wheel plants—small communities, hospitals, airports, industrial plants—provide impressive proof of this unit's extraordinary efficiency.

Helpful engineering data on these Yeomans plants will be sent promptly upon request—no obligation.

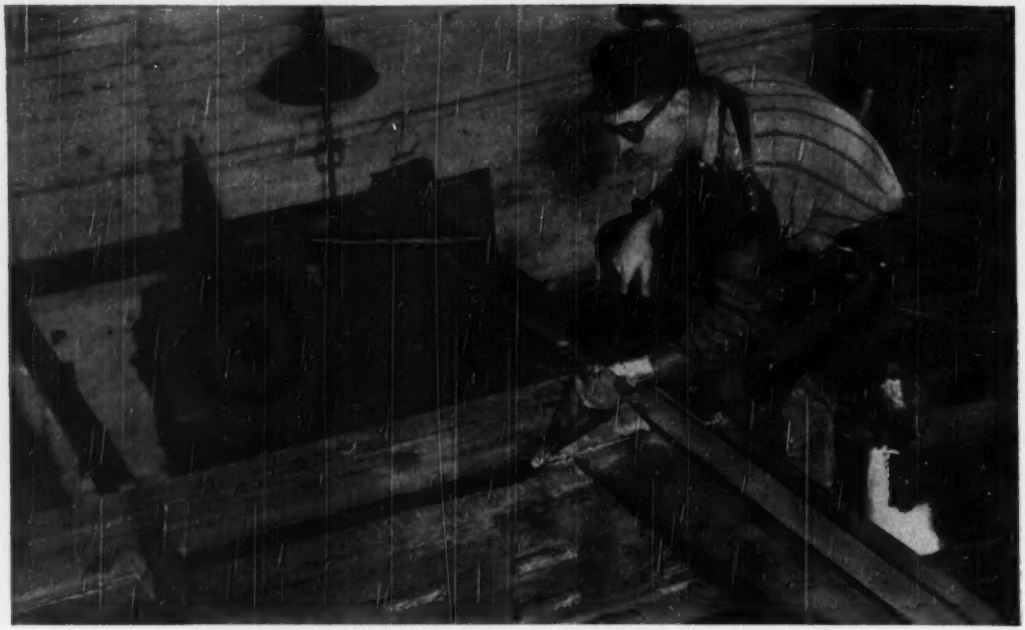
YEOMANS

PUMPS FOR BUILDINGS, MUNICIPALITIES, INDUSTRIAL APPLICATIONS—and a complete line of Sewage and Waste Treatment Equipment

Yeomans Brothers Company
1445 North Dayton Street, Chicago 22, Illinois

Please send information as follows:
☐ Yeomans "Water-Wheel" Distributor
☐ Yeomans "Package" Aerifier

Name_____
Address_____
City_____ State_____



For faster, easier shop fabrication of structural members, Lincoln's

NEW High-Current-Density

HIDDEN-ARC WELDING PROCESS

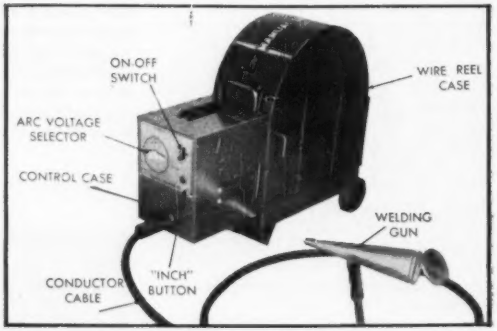
can cut your welding costs

Here's the latest, most important development in faster, easier, lower-cost arc welding... Lincoln's exclusive High-Current-Density, Hidden-Arc Welding Process. Through the use of current densities up to 600 amps. on 1/16" diameter continuous welding wire (equivalent to 9600 amps. on a 3/8" rod!) you get welding speeds up to 360 inches per minute . . . *3 to 4 times that possible with conventional hand welding.*

Now with the new "Manual Lincolnweld ML-2" the effective cost-cutting benefits of deeper penetration and higher-quality welding in granular flux are further extended to an even wider range of work. With its compact, portable design, the new "Manual Lincolnweld" can be speedily moved to any part of the shop to simplify welding on all flat or near-flat work. It operates from any Lincoln 600 or 900 amp. "Shield-Arc" motor driven or 600 amp. engine driven arc welder, further making it easy to move about the shop especially in confined areas.

For additional flexibility, the welding gun, which uses either 1/16" or 3/32" wire, can be hand-held or mounted in a simple fixture. The unit can be set also for either "Manual Lincolnwelding" or normal hand welding with coated electrodes.

The High-Current-Density, Hidden-Arc Welding Process is an exclusive process of The Lincoln Electric Company, Cleveland, Ohio.



New "ML-2 Manual Lincolnweld" Weight without wire reel only 121 pounds. The control case alone weighs only 50 pounds and can be detached from wire reel case for additional portability in restricted spaces.

GET THE FACTS

Send for free "Manual Lincolnweld" Bulletin 1303, write

THE LINCOLN ELECTRIC COMPANY

Dept. 138, Cleveland 1, Ohio

LINCOLN

Sales Offices and Field Service Shops In All Principal Cities

CALENDAR

Building Research Advisory Board—Research correlation conference, National Academy of Sciences, Washington, D. C., Sept. 26.

Pennsylvania Water Works Association, Claridge Hotel, Atlantic City, N. J., Sept. 26-29.

Rocky Mountain Sewage Works Association, La Fonda Hotel, Santa Fe, N. M., Sept. 27-29.

Producers' Council, Hotel Roosevelt, N. Y. City, Sept. 27-29.

South Dakota State Association of County Commissioners, Auditors, Highway Superintendents and State Highway Officials, annual convention, Cataract Hotel in Sioux Falls, Sept. 28-30.

Pacific Coast Building Officials Conference, Manor Hotel, San Diego, Calif., Oct. 3-6.

National Council of State Boards of Engineering Examiners, Congress Hotel, Chicago, Ill., Oct. 9-11.

Federation of Sewage Works Associations, Hotel Statler, Washington, D. C., Oct. 9-12.

ASCE, fall meeting, Congress Hotel, Chicago, Ill., Oct. 11-14.

Structural Engineers' Association of California, Hotel Del Coronado, Coronado, Calif., Oct. 12-14.

S. W. section AWWA, Roosevelt Hotel, New Orleans, La., Oct. 15-18.

Public Works Congress and Equipment Show, 9th Regiment Armory, New York City, Oct. 15-18.

Water conference, Engineers' Society of Western Pennsylvania, Hotel William Penn, Pittsburgh, Pa., Oct. 16-18.

National Association of Housing Officials, Detroit, Mich., Oct. 16-19.

National Conference on Industrial Hydraulics, Sherman Hotel, Chicago, Ill., Oct. 18-19.

Pennsylvania section, AWWA, Roosevelt Hotel, Pittsburgh, Pa., Oct. 18-20.

Engineers' Council for Professional Development, Tudor Arms Hotel, Cleveland, Ohio, Oct. 20-21.

National Public Health Engineering Conference, University of Florida, Gainsville, Oct. 23.

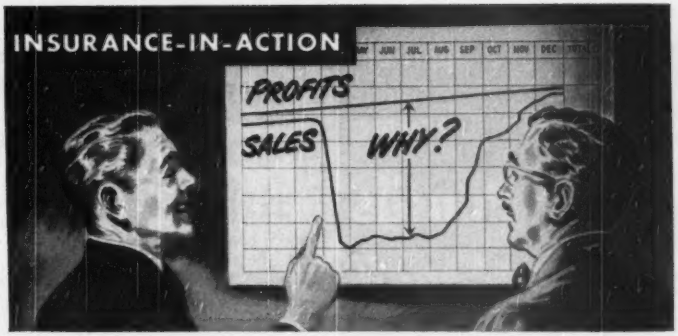
Structural Clay Products Industry, Broadmoor Hotel, Colorado Springs, Colo., Oct. 23-26.

American Institute of Steel Construction, Shamrock Hotel, Houston, Tex., Oct. 23-26.

American Concrete Institute, Mayflower Hotel, Washington, D. C., Oct. 24-26.

California section, AWWA, U. S. Grant Hotel, San Diego, Calif., Oct. 24-27.

Carolinas Branch, A.G.C., White Sulphur Springs, W. Va., Oct. 30-31.



An 8-month shutdown did not hurt our profits!

(Based on claim #H-49-1306)

When fire damaged the building of our furniture company last year, it took us 8 months to re-establish the business. Normally, the firm would have earned a $133,632.73 profit during this period. Instead, with sales drastically curtailed, we only earned $53,358.43...*a loss in profits of $80,274.30!* Added to this were continuing expenses and expediting charges of $35,759.42...making a total of $116,033.72 which the firm stood to lose. *But,* because we had Business Interruption Insurance *in a sufficient amount,* the business collected $116,033.72... enough to offset the necessary expediting charges and continuing overhead and give us our *full anticipated profit!*

• • •

Why let *your* firm risk a crippling loss of income should fire or other insurable hazard cause a shutdown? Find out, now, how much Business Interruption Insurance is needed! Hartford's work sheets make this easy. Just mail coupon for free copies . . . or see your Hartford agent or insurance broker. In more than 5000 communities you can reach your Hartford agent by calling Western Union, asking for "Operator 25".

HARTFORD FIRE INSURANCE COMPANY
HARTFORD ACCIDENT AND INDEMNITY COMPANY
HARTFORD LIVE STOCK INSURANCE COMPANY

HARTFORD
FIRE INSURANCE COMPANY 4
Hartford 15, Connecticut

Please send free copies of work sheets for Business Interruption Insurance.

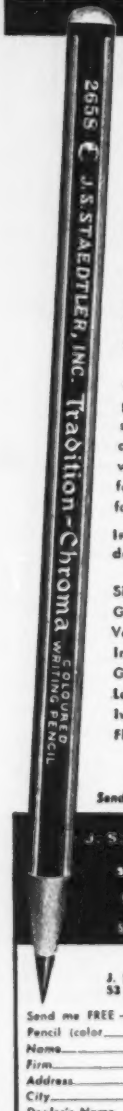
Name_____
Firm Name_____
Address_____
City_____ State_____

Make Any Comparison!

Tradition Chroma

Color Pencils

have no Equal!



TRADITION CHROMA by Staedtler, inventor of the first colored pencil in 1834, combines the brilliancy of the colored crayon with the strength of the colored copying pencil. Test TRADITION CHROMA yourself. We guarantee you'll like them best.

Sharpen TRADITION CHROMA to a fine or blunt point. Lead will not smudge. The clear, distinct, fadeproof colors are not water soluble.

TRADITION CHROMA is unmatched for checking blue prints, maps, office work, sketching, rendering, and all architectural and engineering work. In addition, there are four colors especially designed for blue print marking.

In 16 vivid colors. If your dealer cannot supply you, write us.

Silver*	Bishops Lilac
Gold*	Mountain Blue
Vermilion Red	Chrome Green
Indigo Blue	Saturn Orange
Grass Green	Chalk White
Lemon Yellow	Mouse Grey
Ivory Black	Brick Red*
Florentine Brown	Zinc Yellow*

*Especially designed for Blue Print Marking.

Send coupon today for FREE sample.

J. S. STAEDTLER, INC.
53 WORTH STREET
NEW YORK 13, N.Y.
STAEDTLER SINCE 1662

ENR

J. S. STAEDTLER, INC.
53 Worth Street, New York 13, N. Y.

Send me FREE — a TRADITION CHROMA Colored Pencil (color_____)

Name_____ Title_____

Firm_____

Address_____

City_____ State_____

Dealer's Name_____

UNIT PRICES BID BY CONTRACTORS

Cachuma Dam for Santa Barbara Co., Calif.

The low bid of $6,722,520 for Cachuma Dam was the only one of 11 bids below the engineer's estimate. It was 1.4% below the estimate, 5% below the second low and 45.5% below the high bid. This is the third major contract of the Cachuma Project. Bids were opened July 6, 1950, by the Bureau of Reclamation at Goleta, Calif. The 6-mile Tecolote Tunnel, (unit prices reported in ENR April 28, 1949) costing about $5,500,000, and the 28-mile Goleta-South Coast Conduit, at about $1,500,000, are already under construction.

The earth-fill dam will be 2,975 feet long and 275 feet high. Its storage capacity will be 210,000 acre-feet of excess seasonal water from the Santa Ynez River to increase Santa Barbara's water supply and irrigate 29,650 acres of land in the county. Work includes a spillway on the left dam abutment; tunnel outlet works consisting of inlet channel, intake structure, concrete-lined, 7-foot horseshoe tunnel and a control house; access roads and diversion of Hilton Creek. The job will take 2½ years to complete, with a penalty of $700 per day for overrunning completion date.

Wages to be paid are: bricklayers, $2.625 an hour; ironworkers, reinforcing, $2.20, structural, $2.38; carpenters, $2.12; common laborers, $1.57; power equipment operators, $1.87-$2.50. Bidders include:

1 Mittry Constructors, Inc., West Los Angeles, Calif. (contract)	$6,722,520
2 Wunderlich Constr. Co., Omaha	7,062,484
11 Arundel Corp., San Gabriel, Calif.	9,781,616
Engineer's estimate	6,818,270

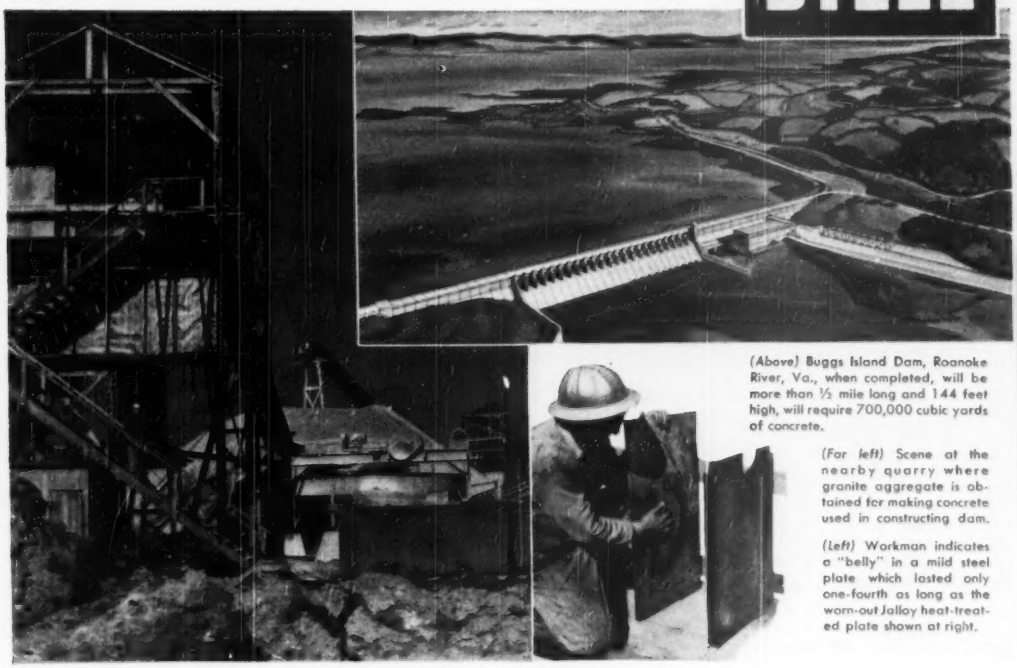
Items	Quantity	Unit prices 1C	2	
Divr & care of R. & unwatr fndn	ls		$225,000	$135,000
Excavation				
Open cut sp, outlet wks, Hilton Cr. div				
Cl 1 1st cy	280,000	.38	.50	
Cl 1 over cy	280,000	.36	.25	
Cl 2 1st cy	425,000	.42	1.00	
Cl 2 over cy	425,000	.36	.35	
Open cut sp, sep. trans to embank				
Cl 1 1st cy	418,000	.50	.60	
Cl 1 over cy	418,000	.46	.30	
Gr cap & sp cut-off trenches	cy	3,475	15.00	4.20
Outlet wks tunnl	cy	3,800	40.00	33.00
Perm struc st tunl supports, liner plates, lag, f & p	lb	105,000	.23	.24
Excavation				
Fndn dam embank:				
above El 570	cy	255,000	.50	.50
sep. trans to dam embank	cy	70,000	.60	.60
below El 570 1st cy	135,000	.50	2.00	
below El 570 over cy	135,000	.55	.35	
Strip borw areas	cy	400,000	.25	.25
Borw areas 1 & res. sep. trans to dam embank 1st Mcy	1,700	.44	.60	
over Mcy	1,700	.42	.30	
Borw area 2, trans to embank 1st cy	500,000	.40	.10	
over cy	500,000	.36	.25	
Dumped riprap	cy	10,500	2.50	2.50
Backfill	cy	83,000	.40	.25
Earth fill in embank				
Zone 1 1st Mcy	1,500	.08	.12	
Zone 1 over Mcy	1,500	.08	.10	
Spec. compact	cy	15,100	1.10	2.50

Items	Quantity	Unit prices 1C	2
Sand, grav, cobl fill			
Zone 2 1st Mcy	1,400	.06	.10
Zone 2 over Mcy	1,400	.04	.06
Monterey form fill in embank, Zone 3 cy	700,000	.10	.12
Riprap, upstr slope cy	125,000	2.50	2.50
Furn new pipe, const embank toe drs, uncmt jts, 10" lf	1,800	2.00	2.00
12" lf	1,100	4.00	2.00
Furn new pipe, const drs, uncmt jts: 4" lf	10,000	1.00	1.00
6" lf	4,000	2.00	1.30
8" lf	4,900	2.75	1.60
12" lf	540	4.00	2.50
Sew pipe, cmt jts, f & lay, 4" lf	820	1.50	2.00
6" lf	50	3.10	2.00
10" lf	400	3.50	2.50
12" lf	230	4.00	3.00
15" lf	280	4.50	3.00
Cont grav dr, back of sp walls cy	200	7.00	6.00
14-gage, 24" CM pipe, f & lay lf	40	4.00	10.00
Drl gr holes in stage bet depths 0-35' lf	20,400	.80	1.75
35'-60' lf	8,000	2.00	1.85
60'-110' lf	12,000	2.10	2.60
110'-160' lf	4,000	2.50	2.10
Std black pipe, fits for fndn grg, f&p lb	11,500	.80	.35
Zinc-coat pipe, fits, spec gr outlets, f&i lb	250	1.50	1.50
Pressure grtg cf	23,650	1.50	1.00
with packers cf	35,750	2.10	1.10
Drl holes anchor bars & grout in pl lf	32,650	.80	1.00
Reinf bars, f & p Mlb	3,853	.085	.075
Concrete in:			
Grout cap cy	1,250	16.00	20.00
Tunnel lining cy	1,700	45.00	35.00
Gate chamber cy	90	90.00	50.00
Intake struct			
Below el 570 cy	140	60.00	60.00
Above el 570 cy	110	70.00	70.00
Con hse substruc cy	380	60.00	30.00
Superstruct cy	145	70.00	50.00
Outlet wks, st 2 cy	80	80.00	35.00
Sp gate struct cy	7,600	35.00	35.00
Sp floors 1st cy	14,200	20.00	20.00
Sp floors over cy	14,200	18.00	16.00
Sp walls cy	14,800	28.00	35.00
Paved gutters cy	100	30.00	35.00
Parapet & curb cy	1,130	28.00	30.00
Joint filler, f & p			
Resil-type sf	210	2.00	2.00
Bit-type sf	210	1.50	2.00
Rubr water stops, p lf	140	2.00	2.00
Metl seals, f & p			
Type N-1 lf	120	2.50	3.00
Type Z lf	2,500	2.00	3.00
Radial gates, i Mlb	1,187	.07	.06
Rad-gate hoists, i lb	110,000	.10	.05
High-pres gate, & conduit lining, i lb	24,500	.25	.05
Con app & pipg for high-pres gate lb	2,400	.50	1.00
Slide gate, hoist, i lb	3,500	.35	.40
Outlet pipe, i lb	75,000	.12	.10
Metl pipe, fits, vlv, i			
Less than 6" lb	7,150	.60	.46
6" & larger lb	1,600	.60	.30
Trashrack mtlwk, i lb	13,900	.30	.10
Hatch covs, fl plates, gratings, i lb	16,200	.50	.20
Ladders, stairways & platforms, i lb	1,400	.35	.50
Embed frames, i lb	5,300	.30	.50
Hoist, runwy beam, i lb	1,300	.25	.20
Vent sys, i lb	4,500	.50	.25
Wire fence, erect lf	2,000	1.00	1.00
Pipe handrails, i lb	25,850	.20	.10
Misc metalwk, i lb	9,200	1.00	.10
Metal doors, f & i sf	91	15.00	5.00
Mtl-sash windw, f&i sf	88	5.00	5.00
Mtl louvers, f & i sf	30	6.00	5.00
St part, f & i sf	230	5.00	5.00
Roofings, f & p sf	510	2.00	1.00
Sel grav surf cy	4,100	3.50	.60
Beam-type guardrail f & erect lf	1,800	3.00	3.00
Elec mtl conduit, f& i 1" and less lf	2,530	2.50	1.00
1¼"-1½" lf	650	3.00	1.00
Ground wire, f & i lb	115	4.00	5.00
Elec conductors, i lb	945	3.00	1.00
Elec app, i lb	3,000	1.50	.50
Drill holes for:			
Piezometr, app 1½" lf	600	3.00	2.00
Settlemt app, 4" lf	40	12.00	5.00
Trenches, test app cy	1,500	8.00	4.00
Piezometr tubg i lf	108,000	.10	.10
Setlmt app in dam, i lb	4,750	2.00	1.00
Test app in terminal wall, i ls		1,500	1,000
Surf setlmt points, i ea	65	12.00	10.00

Sp—spillway; i—install; f & i—furnish & install; f & p—furnish & place

$12,500 SAVED in construction equipment maintenance with first 45 tons of Heat-treated JALLOY STEEL PLATE

J&L STEEL



(Above) Buggs Island Dam, Roanoke River, Va., when completed, will be more than ½ mile long and 144 feet high, will require 700,000 cubic yards of concrete.

(For left) Scene at the nearby quarry where granite aggregate is obtained for making concrete used in constructing dam.

(Left) Workman indicates a "belly" in a mild steel plate which lasted only one-fourth as long as the worn-out Jalloy heat-treated plate shown at right.

JALLOY Heat-Treated Plate lasts 4 to 5 times as long as mild steel in handling crushed stone for Buggs Island Dam

Buggs Island Dam, across the Roanoke River near South Hill, Va., is being constructed by Department of the Army, Corps of Engineers, Norfolk District. Granite is blasted from a quarry three miles from the dam site and crushed into various sizes. In moving and handling this hard abrasive rock, *worthwhile* savings are being made by using heat-treated JALLOY plate for: Chutes, screening equipment, truck bodies, shovel-dipper teeth and similar materials-handling applications.

At the quarry, operated by Ralph E. Mills and Gorman Bros., Inc., direct comparisons show that heat-treated JALLOY plate lasts an average of 5 times as long as mild steel. During the first 11 months, approximately 25 tons of JALLOY heat-treated plate were installed at the quarry.

At the dam, Jones-Tompkins-Wright, Contractors, installed approximately 20 tons of heat-treated JALLOY plate during the first 10 months of operations. Here JALLOY lasts on an average of 4 times as long as mild steel.

At both locations, approximately 45 tons of JALLOY heat-treated plate have effected a saving in the cost of steel for maintenance alone of more than $10,000. Labor savings in man-hours worked by maintenance crews have been conservatively estimated at more than $2,500.

Wherever heat-treated JALLOY plate is used to resist abrasion and impact, similar results are being obtained. Little wonder that this manganese moly steel is becoming so popular in materials-handling operations. Let us send you our booklet, "For Longer Wear . . . Less Repair." It describes how others are saving money with heat-treated JALLOY Steel Plate, The Mining and Quarrying Steel.

Jones & Laughlin Steel Corporation
434 Jones & Laughlin Building
Pittsburgh 30, Pa.

Please send me a copy of: "For Longer Wear . . . Less Repair — JALLOY — J&L Special Alloy Steel."

NAME_____

COMPANY_____

ADDRESS_____

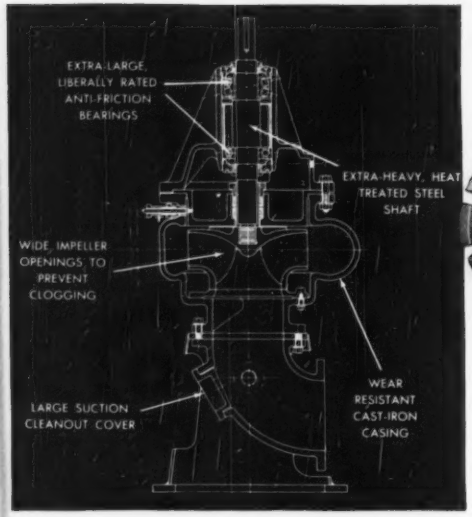
JONES & LAUGHLIN STEEL CORPORATION

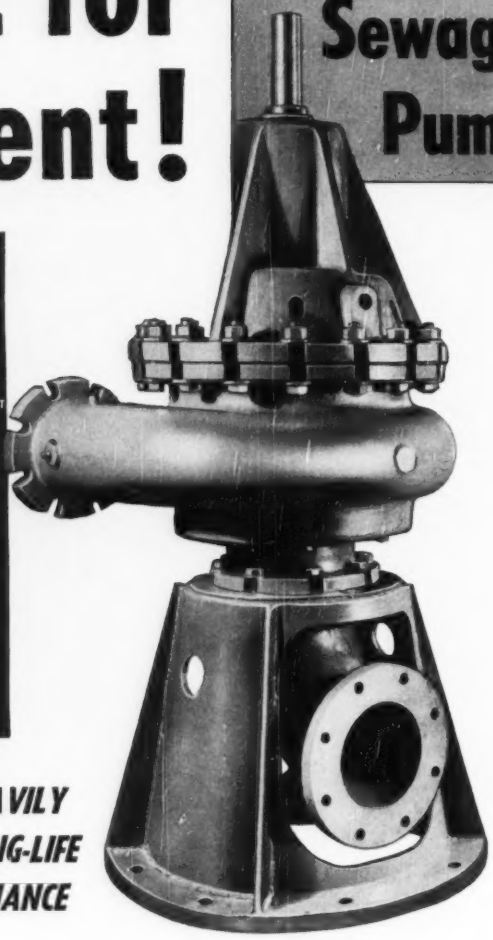
From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY (*hi-tensile steels*).

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

A BRUTE for Punishment!

ALLIS-CHALMERS Sewage Pump


EXTRA-LARGE, LIBERALLY RATED ANTI-FRICTION BEARINGS
EXTRA-HEAVY, HEAT TREATED STEEL SHAFT
WIDE, IMPELLER OPENINGS TO PREVENT CLOGGING
WEAR RESISTANT CAST-IRON CASING
LARGE SUCTION CLEANOUT COVER



GENEROUSLY DESIGNED AND HEAVILY CONSTRUCTED TO GIVE YOU LONG-LIFE OPERATION AND LOW MAINTENANCE

FROM SHAFT TO BASE, extra-heavy construction in this new sewage pump adds up to long wear and low maintenance.

The shaft is heavier than in conventional sewage pumps—and made of open-hearth, heat-treated steel selected for high shock strength to resist breakage. Anti-friction bearings are extra-large and liberally rated. Impeller inlets are rounded-off, generously large to prevent clogging.

A radially-split casing makes it easy to remove the complete rotating element by simply removing the universal coupling and loosening a few bolts. You do it all in a few minutes and don't have to disturb the intake or discharge piping.

Standard sizes to 10,000 gpm — can be built larger. See your nearest A-C Sales Office or write for Bulletin 08B7504 for more complete details on this new pump. A-3113

ALLIS-CHALMERS, 1018A SO. 70 ST. MILWAUKEE, WIS.

ALLIS-CHALMERS

Texrope is an Allis-Chalmers trademark.

World's Widest Range of Public Works Equipment

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

CONTRACTS AWARDED

▲ **Calif., San Francisco**—Pub. Utilities Comn., City Hall, 14.4 mi. San Joaquin Pipeline 2, Sect. A, Hetch Hetchy Contr. 230, Schedule 3, Sect. A2, to P. & J. Artukovich, 133305 S. San Pedro St., Los Angeles, $1,663,711; Schedule 2, to United Concrete Pipe Corp., Box 425, Baldwin Park, $1,674,019. Bids 822a. (Correction—cost). CD 9/6, under CA.

Fla., Jacksonville—City, constr. Lake Shore Pumping Station, to James H. Small & Co., 1538 E. Adams St., Zone 2, $379,600. Awarded 8/31, Reynolds Smith & Hills, 227 Park St., Zone 1, engrs. CD 7/20.

Mich., Bay City—Bangor-Monitor Metropolitan Dist., 503 N. Euclid Ave., water mains, service and distr. mains, to Saginaw Constr. Co., Saginaw, $37,448. Bids 8/18.

Mo., Maysville—City, water supply, to Koch Schroeder Constr. Co., 19 S. Frederick St., St. Joseph, $44,914. Bids 8/18, W. B. Rollins & Co. Railway Exchange Bldg., Kansas City, Mo., engrs. CD 8/9/49.

N. J., Mount Holly—City, 1,150,000 gal. water tower on site present company reservoir, 55 ft. wide, 75 ft. high, to Chicago Bridge & Iron Co., 165 Broadway, New York, N. Y. Approx. $50,000.

Okla., Tulsa—City, City Hall, Grand River crossing on Second Spavinaw Contr. 9, to M. E. Gilliozz, Monett, Mo., $702,740. Est. $705,194. Bids 8/18. CD 8/24, under LB.

† **Tenn., Oak Ridge**—U. S. Atomic Energy Comn., Oak Ridge, 10 m. gal. water treatment plant, to Thomas A. Bryan & Assoc., Inc., M & M Bldg., Houston, Tex. $875,000.

Tex., Dallas—City, City Hall, Main and Harwood Sts., chemical bldg., Carrollton Plant Proj., to J. W. Bateson Co., Irwin-Keasler Bldg., $737,145, est. $750,000; c.i. watermains, various locations in Terry Heights and Sleeth's addn. to Stimson Corp., 3901 Fordheim St., $33,169. Bids 9/5, awarded 9/9. CD 8/15.

Tex., Houston—Gulfton Utilities, Inc., c/o J. A. Nix, 1916 Portsmouth St., rein.-con. ground storage tank, own forces. $33,000. CD 7/27.

Que., Ste. Genevieve de Pierrefonds—Municipality, water sys. exten., to H. G. O'Connell, Ltd., Canada Cement Bldg., Montreal, $204,000. Gohier & Dorais, 10 E. St. James St., Montreal, engr. Bids 7/19.

SEWERS, WASTE DISPOSAL

BIDS ASKED

N. Y., Long Beach—B.A. 9/25—City Manager, City Hall, sewage treatment plant. $900,000. Plans deposit $40. CD 9/26/49.

Ont., Almonte—B. A. 9/25—Town, R. J. France, clk., Almonte, laying about 4,000 lin. ft. sanitary sewers and 3,500 lin. ft. water mains. $50,000. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs.

Maryland—B. A. 9/26—State Rd. Comn., Baltimore, Zone 2, installing storm sewer outfalls adjacent to Georgia Ave. along Spring St., Ballard St., Woodside Parkway and surrounding vicinity, Contr. M 435-3-315, Montgomery Co. Plans deposit $5. Wm. F. Childs Jr., 108 E. Lexington St., Baltimore, Zone 2, ch. engr. engrs.

N. Y., Schenectady—B.A. 9/27—Contract & Supply Com. City Hall, Contr. 1H, heating and ventilating; Contr. 1P, plumbing for sewage treatment plant. Plans deposit $25. Havens & Emerson, Woolworth Bldg., 233 Broadway, New York, consult. engrs. CD 8/14/45.

Ill., Washington—B.A. 9/29—City, Tazewell Co., Louise Jenkins, city clk., City Hall, sewerage imprvs. Plans deposit $30. Warren & Van Praag Inc., 253 S. Park St., Decatur, consult. engr.

Calif., Petaluma—B. A. 10/2—City, City Hall, sewage works enlargement. Approx. $50,000. Plans deposit $20. Harry N. Jenks, 63 Crescent Dr., Palo Alto, engrs.

Calif., Los Angeles—B. A. 10/3—Bd. Supervs. Los Angeles Co., 501 Hall of Records, 2.53 mi. sanitary sewers in Grape St., Montebello, C.I. 1244. $82,180. C. E. Arnold, co. engr. CD 3/3.

La., Ferriday—B.A. 10/3—Mayor, City Hall, sewerage sys., 15 mi. sewer, lift stations, sewage treatment plant. Plans deposit $25. J. M. Fourmy, Hammond, engr.

N. Y., Buffalo—B.A. 10/3—F. W. Crane, comr. P. Wks., 502 City Hall, Contr. A, furnaces, appurtenances, of refuse incinerating plant. Plans deposit $15. Greeley & Hansen, 220 S. State St., Chicago, 4, Ill., engrs. CD 9/14/44.

LOW BIDDERS

Calif., Carmel—Carmel Sanitary Dist., Ocean and Dolores Sts., Aug. 28, sewers, from Manuel Smith, Route 1, Box 352, Winton, $181,424. CD 7/31.

Calif., Oakland—East Bay Municipal Utility, Dist. 512 16 St., Aug. 25, furnish rein.-con. pipe for the interceptor sewers, Spec. SD-54, from American Pipe & Constr. Co., 787 85 Ave., $247,832. CD 11/13/46.

▲ **Ill., East St. Louis**—City, J. T. Connors, mayor, City Hall, Main St. at Missouri Ave., and E. Side Levee & Sanitary Dist., 2642 McCasland Ave., Dan Foley, pres., cancelled bids to have been opened Sept. 1, sanitary sewer serving city and suburban area of Lansdowne and Edgemont. $7,000,000-$11,000,000. David J. Johnston, city engr. Horner & Shifrin, Shell Bldg., 1221 Locust St., St. Louis, Zone 3, consult. engrs. Will re-advertise. CD 8/15.

Mo., St. Louis—City, Bd. P. Service, Frank J. McDevitt, pres., 304 City Hall, 12 and Market Sts., Zone 3, Aug. 29, repair slide on River Des Peres Drainage Works about 600 ft. from Mississippi River, from J. S. Alberici Constr. Co., Inc., 1550 Irving Ave., Zone 20, $61,850. CD 7/31.

† **Alaska, Skagway**—Dpt. Interior, Div. Territories & Island Possessions, Alaska-Juneau Gold Mining Co., Juneau, Aug. 30, 2,090 lin. ft. 6- to 12-in. sewers; 4,980 2-to 10-in. water mains, construct wood tower for water tank and re-erecting 100,000 gal. water tank. Proj. 50-A-2, from Hayes & Whitely, Juneau, $58,959. CD 8/15.

CONTRACTS AWARDED

Ark., Hope—City, City Hall, imprv. sewage treatment plant, to Worth James Constr. Co., Pyramid Bldg., Little Rock, $107,619. Bids 8/25. CD 8/16.

Calif., Chester—Chester Sanitary Dist., Justice Court Bldg., sewage treatment plant, to G. E. Miller, Box 1728, Reno, Nev., $45,142; collection sys., to John B. Powers, 2284 Lakeside Dr., Reno, Nev., $131,123. CD 8/30, under LB.

N. H., Laconia—City, City Hall, sewage treatment plant, to Mass Northern Constr. Corp., 588 Essex St., Lawrence, Mass. $600,000. CD 8/22, under LB.

N. J., Hamilton Twp.—Hamilton Twp., 6,600 ft. sewer line in Lakeside Park, to Hartman & Riley Constr. Co., Edinburg Rd., Mercerville. $80,880. Awarded 9/7.

Tex., Kilgore—City, sanitary sewer lines, replacement and reconditioning, $65,000; disposal plant imprvs., remodeling, $60,000, own forces. CD 4/13.

Tex., Midland—City, sanitary sewer line exten., force account. $75,000. CD 6/29.

Wis., Milwaukee—City, City Hall, sewers in Sheridan Ave., to R-W Constr. Co., 4831 W. State St., Zone 8, $75,433. Lloyd D. Knapp, city engr. Bids 8/23.

Wis., Mukwonago—Village, sewage treatment plant, to F. M. Scheflow, Sherwin Blk., Elgin, Ill., $99,850. Bids 8/21, awarded 8/28. Jensen & Johnson, Elkhorn, engrs.

Que., Montreal—Municipality, tributary sewer in Masson Ave., to Atlas Constr. Co. Ltd., 4781 Ste. Catherine St. W., $148,964. Bids 8/26. CD 8/3.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

BRIDGES

BIDS ASKED

D. C., Wash.—B.A. 9/27—Govt. of Dist. of Columbia, Director Hys., District Bldg., 14 and E Sts. N. W., Zone 4, construct bridge under Baltimore & Ohio R. R. tracks on Kansas Ave. Plans deposit $10.

† **Missouri**—B.A. 10/5—Dpt. Commerce, c/o Dist. Ranger, U. S. Forest Service, Bureau P. Roads, Fredericktown, 0.033 mi. bridge on Missouri Forest Hy. Proj. 47 A, in Perry Co., H. J. Spelman, P. O. Box 338, Albert Pike Station, 115 Nevada St., Hot Springs, Ark., div. engr.

LOW BIDDERS

New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, Sept. 7, Contr. 49, two overpasses and one underpass for its 118 mi. superhighway, Hudson Co., from Ell-Dorer Contg. Co., 644 Nye Ave., Irvington, $778,805. CD 8/17.

Tex., Snyder—City, Aug. 31, 3 concrete bridges and wid'n 2 bridges, from Harry Newton, Inc., Graham, $109,111. est. $125,000. CD 8/24.

CONTRACTS AWARDED

Alabama—State Hy. Dpt., Montgomery, 0.515 mi. Underpass on 6 Ave. (Avenue "F") in Birmingham, FAGM-61 (2), Jefferson Co., to W. C. Howton Contr. Co., 3904 10 Ave. N. Birmingham, $564,551. Bids 8/18. CD 8/24, under LB.

Kansas—State Hy. Comn., Marion, 105-133-105 ft. continuous plate girder and 65x65 ft. continuous steel beam span Bridge 50 S 57 14.9, Sta. 621 plus 75 12 over Cottonwood River and A. T. & S. F. Railroad, northeast of Florence on new location of US 50 S, Proj. 50 S 57 FI 613 (1), Marion Co., to W. W. Geiger, Inc., First St. and Topeka Blvd., Topeka, $153,566. CD 8/4.

Kansas—State Hy. Comn., Pratt, Bridge 14-80-10.3, Sta. 31 plus 00, 45 ft. five and 63 ft. 45 ft., Proj. 14-80 F 26 (3); and Bridge 14-80-10.9, Sta. 59 plus 25, 35 ft. three and 49 ft. 35 ft., Proj. 14-80 F 26 (3), Rice Co., to Banta Constr. Co., Harper, $111,117.

Kansas—State Hy. Comn., Russell, Bridge 181-71-13.9 Sta. 72 plus 02, 80 ft. three and 100x80 ft. continuous plate girder spans, Proj. 181-71 S 345 (2), Osborne Co., to O. G. Brommer, Belleville, $93,056.

New Jersey—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Contr. 56, construct cast in place piles on superstructures and substructures of overpasses at Paunpeck Creek and Bellmans Creek, east of Hackensack River, Hudson Co., to George M. Brewster & Son, Inc., 275 W. Fort Lee Rd., Bogota, $838,973. Bids 8/17. CD 8/30, under LB.

▲ **Pennsylvania**—State Hy. Dpt., Harrisburg, continuous deck plate girder and I-beam bridge; divided hy. consisting of c. conc. pavement 24 ft. wide on each side of c. conc. divisor and plain c. conc. base with bit. 25 ft. and variable on each side of conc. divisor incl. rein.-con. box., c. conc. variable in width 30 to 52 ft., const. rein.-con. bridge, c. conc. with bit. for pavement adjustments, 10,481 ft. L. R. 82 (9). T. R. 6, 19,322 from point in city of Meadville southwesterly, Crawford Co., to S. J. Groves & Sons Co., 53 Messenger St., Johnstown, $3,775,560. Bids 8/25. CD 8/29, under LB.

STREETS AND ROADS

LOW BIDDERS

Alabama—State Hy. Dpt., Montgomery, Aug. 18, base and bit. resurf. 5.524 mi. road from Jacksonville toward Piedmont, F-52 (4), Calhoun Co., from Dozier Bros. Constr. Co., Mt. Meigs, $81,828**double surf. tr. and plant mix 4.088 mi. Attalla-Guntersville Rd. F-88 (4), Etowah and Marshall Counties, and single surf. tr. and plant mix 6.072 mi. part of Jasper-Birmingham Rd. F-116 (3), Proj. "B", Jefferson and Walker Counties from Moss-Thornton Co., Inc., Box 127, Leeds, $191,539 and $522,799 respectively. CD 8/9.

Calif., Sacramento—Sacramento Co., Courthouse, Aug. 30, construct Folsom-Auburn Rd. near Folsom Dam, from McGillivray Constr. Co., Box 873, $194,772. CD 8/16.

Calif., Sacramento—Sacramento Co., Courthouse, Aug. 30, imprv. streets in South Land Park Terrace, Unit 3, from J. R. Reeves, Box 1072, $55,065. CD 8/23.

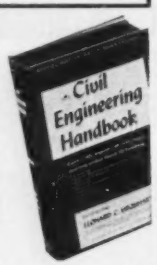
Maine—State Hy. Comn., Augusta, Aug. 30, bit. grav. surf. 1.35 mi. F. A. Secondary Proj. S 0210 (3), Albion, from Lee Bros., RFD, Albion, $69,268. CD 8/24.

Michigan—State Hy. Dpt., Lansing, Aug. 31, c. conc. 4.284 U. S. Rte. 23 north and south, Monroe and Washtenaw Counties, from Pierson Contg. Co., 609 Eddy Bldg., Saginaw, $416,935. CD 8/25.

Minnesota—State Hy. Dpt., St. Paul, Aug. 25, grav. base, plant mixed bit. surf., c. conc. pavement 2.6 mi. Douglas Co., from Megarry Bros., St. Cloud, and

NOW . . . fully revised and enlarged to give you . . .

THE LATEST AND BEST IN CIVIL ENGINEERING PRACTICE AND PROCEDURE



Here, to meet the needs of practicing engineers who must solve specific problems — particularly those outside their specialized fields—is a modern treatment of the *fundamentals, theory,* and *practice* of the various subdivisions of civil engineering. With the aid of the up-to-date, detailed data and practice given in this completely revised 3rd Edition, you can check your present methods and procedures . . . enhance your ability to handle all kinds of jobs *more quickly and efficiently.* Each of the book's 10 big sections has been completely rewritten to bring you right up to the minute on advances and developments in the widely diverse fields of civil engineering.

Just Published! New 3rd Edition

CIVIL ENGINEERING HANDBOOK

Editor-in-Chief,
LEONARD C. URQUHART
Formerly Professor of Structural Engineering, Cornell U. **976 pages, 6 x 9, over 900 illustrations, tables, and diagrams, semi-flexible cover, $8.50.**

IF you *plan, select, design,* or *build* civil engineering structures, you'll find this handbook a tailor-made, time-saving guide in solving your problems—not only in your specialized field but outside it, as well. It's more useful than ever in helping you to save time and trouble in procuring vital information . . . in avoiding costly errors . . . in putting today's approved procedures right at your fingertips. From city surveying and stresses in beams, through bridge trusses and welding and riveting, to pile foundations and intakes and dams—everything you want and need to develop economical, efficient practices is discussed.

10 BIG SECTIONS

1. Surveying
2. Railway, Highway and Airport Engineering
3. Mechanics of Materials
4. Hydraulics
5. Stresses in Framed Structures
6. Steel Design
7. Cement and Concrete
8. Foundations
9. Sewerage and Sewage Disposal
10. Water Supply and Purification

SEE THIS BOOK 10 DAYS FREE

McGRAW-HILL

McGraw-Hill Book Co., Inc.,
330 W. 42nd St., New York 18

Send me Urquhart's **CIVIL ENGINEERING HANDBOOK** for 10 days' examination on approval. If the book proves satisfactory, I will remit $2.50 in 10 days, and $2.00 monthly until $8.50 is paid. Otherwise I will return the book postpaid.

Name .....
Address .....
City ..... Zone ..... State .....
Company .....
Position NR-9-21-50

This offer applies to U. S. only.

Central States Constr. Co., Crosby, $174,453. CD 8/11.

Vermont—State Hy. Dpt., Montpelier, macad. conc. highway, Sudbury, from M. J. Burrington Jr., 105 Main St., Bennington, $103,503.

CONTRACTS AWARDED

Alabama—State Hy. Dpt., Montgomery, single surf. tr. 7.7 mi. from Pintlala to Mt. Carmel, FA-S-1 (2), Montgomery Co., to Newell Bros. Constr. Co., Hope Hull, $120,380; grading, drainage, surf. and bridges 7.184 mi. road from Mobile toward Theodore, F-146 (7) and U-146 (8) Prop \"C", Mobile Co., to L. L. Jarrell, Box 36, Whistler, $555,060. CD 8/9.

Ill., Bradley—City, black top surf. North and South arterial streets, Contr. 11 CS, to Chas. De Long, Bradley, $54,073; East and West Sts., Contr. 12 CS, to Triangle Constr. Co., 480 Evergreen Ave., Kankakee, $59,666. Bids 8/22. CD 8/15.

Kansas—State Hy. Comn., Marion, grading 5.003 mi. Proj. 14-27 F 330 (10), and grading 3.969 mi. Proj. 14-27 F 330 (11), Ellsworth Co., to Reinhardt Brothers, Russell, $69,724 and $58,930 respectively. CD 8/4.

Kansas—State Hy. Comn., Pratt, Alternate 2 b. conc. 0.556 mi. Proj. 15-87 F 326 (16) Part I, 2.093 mi. Proj. 15-87 F 326 (16) Part II, and 2.075 mi. Proj. 15-87 F 580 (4), Sedgwick Co., to Peter Kiewit Sons Co., Airport P. O., Wichita, $205,423***c. conc. 6.298 mi. Proj. 54-76 F 341 (20) Part II, Pratt Co., to Koss Constr. Co., Pauline, $361,584*** c. conc. 2.180 mi. Proj. 14-80 F 26 (3), and c. conc. 0.217 mi. Proj. 14-80 F 330 (9), Rice Co., to Standard Constr. Co., 108 S. Grove St., Wichita, $202,356. Grand total $769,363. CD 7/28.

Kansas—State Hy. Comn., Russell, c. conc. 5.687 mi. Proj. 40-84 FI 301 (21), Russell Co., to Peter Kiewit Sons Co., Airport P. O., Wichita. $326,755. CD 8/4.

Kansas—State Hy. Comn., Wamego, sheet asph. surf. course, single asph. surf. tr. 0.808 mi. Proj. 58 46 K 1033 (2), Johnson Co., sheet asph. surf. course 1.308 mi. Proj. 169-105 K 1019 (2) and sheet asph. surf. course 0.164 mi. Proj. 69-105 K 1024 (2), Wyandotte Co., to Reno Constr. Co., Overland Park, $65,320***c. conc. 0.558 mi. Proj. 10-46 F 238 (7), 0.905 mi. Proj. 10-46 U 238 (8), 1.118 mi. Proj. 50-46 UI 315 (21), and grading, base dense graded surf. course 0.143 mi. Proj. 169-46 U 315 (23), Johnson Co., to Harrison Eng. & Constr. Corp., 4630 Mill Creek Pkwy., Kansas City, Mo., $211,218*** c. conc. 0.711 mi. Proj. 58-105 U 526, Wyandotte Co., to A. A. Tobin Constr. Co., 3700 Rainbow Blvd., Kansas City, Kan., $264,486. Grand total $541,024. CD 8/14.

La., New Orleans—City, street imprvs., c. conc. and asph. paving Palmetto St. from Carrollton Ave. to Leonidas St., Prop. 15,029, to Boh Brothers Constr. Co., 2400 Cypress St., Item B $69,721***asph. resurf. Audubon Blvd. from Willow St. to Walmsley Ave., Prop. 15,030, and surf., asph. resurf. (black-stopping) existing roadways in uptown section, Prop. 15,039, to Lang Co., 2500 Poydras St., Item B $70,877 and Item A $76,029 respectively***surf. and asph. resurf. existing roadways in downtown section, Proj. 15,038, to Texas Bitulithic Co., Burma Rd., Item B $61,211. Grand total $277,838.

Md., Towson—Comrs. Baltimore Co., Court House, county roads, to American Paving & Contg. Co., 2525 Loch Raven Rd., Baltimore, $59,350. J. Fred Offutt, Court House, engr. CD 2/7/45.

Neb., Gering—City, paving, curbing, guttering, to Read Constr. Co., 706 W. 19 St., Cheyenne, Wyo. $50,046. E. Y. Grupe, Scottsbluff, engr.

EARTHWORK, WATERWAYS

BIDS ASKED

† California—B.A. 10/3—Bureau Reclamation, Dpt. Interior, Redding, installing heating, ventilating, air-conditioning sys. for lower vista house at Shasta Dam, Central Valley Proj., approx. 10 mi. north of Redding, Spec. 3169.

† New Mexico—B.A. 10/3—Bureau Reclamation, Dpt. Interior, Fort Sumner, earthwork, pneumatically applied mortar lining and structures, Station 137 plus 65 to end, Main Canal, Fort Sumner Proj., Spec. 3174. CD 9/7/44.

LOW BIDDERS

† California—Bureau Reclamation, Dpt. Interior, Friant, earthwork and concrete lining, Station 1629 plus 52.45 to Station 1645 plus 02.00 Friant-Kern Canal, approx. 18 miles east of Fresno, Spec. 3140, from Bent Constr. Co., 5359 Valley Blvd., Los Angeles, $125,245. CD 8/3.

† Nebraska—U. S. Eng., 1709 Jackson St., Omaha, Aug. 22, dike and revetment imprvs., adjacent to Missouri River, near Nebraska City, Inv. 4, from Central Eng. & Contg. Co., Jewell Bldg., Kansas City, Mo. $337,703. Est. $358,359. CD 8/17.

▲ † Nebraska—Bureau Reclamation, Dpt. Interior, Trenton, Sept. 1, earthwork and structures, except bridge superstructures for relocation of Chicago, Burlington & Quincy R. R., Trenton Dam, Spec. 3112, Missouri River Basin Proj., Frenchman-Cambridge Div., from Perry McGlone Constr. Co., 1805 Grand St., Kansas City, Mo. $2,195,468. Est. $2,229,313.

Tex., Snyder—City, Aug. 31, drainage from Harry Newton, Graham, $55,554. Est. $100,000. CD 8/23.

▲ † Utah—Bureau Reclamation, Dpt. Interior, Provo, Sept. 1, earthwork and structures for Terminal Reservoir, Salt Lake Aqueduct, Provo River Proj., Aqueduct Div., Spec. 3139, from Peter Kiewit Sons Co., 345 Kieways Ave., Arcadia, Calif., $1,259,940. Est. $1,491,352.

† Vermont—U. S. Eng., 80 Lafayette St., New York 13, N. Y., cancelled bids to have been opened Sept. 12, clearing, snagging and wall constr., project, Roaring Branch, Hoosic River Basin. CD 8/30.

† Washington—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, maintenance dredging in south fork of Skagit River, Millton, Serial No. CIVENG 45-108-51-10, from Puget Sound Bridge & Dredging Co., 2929 16 Ave. S. W. Seattle, $32,818. Est. $27,916.

CONTRACTS AWARDED

Ark., Helena—White River Drainage Dist., 410 Solomon Bldg., 267,000 cu. yd. excav. and 225 acres clearing canals in district to Doc Hudson, Helena, $0.1673 per cu. yd. Bids 8/22. CD 8/10.

† Missouri—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., 328,000 cu. yd. earthwork, Levee Items R-943 and R-933R, in vicinity of Wolf Island and Dorena, Mississippi Co., Inc., CIVENG 40-041-51-5, to Mett, Blackburn Ferguson, Fredonia, Ky., $76,560; 390,000 cu. yd. earthwork, Levee Item R-948 in vicinity of Crosno, Mississippi Co., Inc. CIVENG 40-040-51-5, to C. J. List Constr. Co., Railway Exchange Bldg., Kansas City, Mo., $139,620. Bids 8/16. CD 7/21.

Tex., Houston—Gulfton Utilities, Inc., c/o J. A. Nix, 1916 Portsmouth St., open and closed drainage, own forces $55,000. Howe & Wise, 419 San Jacinto St., engrs.

† Washington—U. S. Eng., 4735 E. Marginal Way, Zone 4, maintenance dredging Duwamish Waterway, Serial No. CIVENG 45-108-51-8, to General Constr. Co., 3840 Iowa St., Seattle, $126,380. Est. $120,769. Bids 9/1. CD 8/24.

▲ Ont., London—Upper Thames River Conservation Auth., London, construct Fanshawe Dam proj. north of here, to Foundation Co. of Ontario, Ltd., 1220 Bay St., and Fred J. Mannix & Co. Ltd., Calgary. Approx. $2,800,000. CD 6/20, under LB.

Que., St. Rosaire—Province of Quebec, Dpt. Agriculture, Quebec City, drainage sys., to P. Baillergeon, 264 Champlain St., St. Johns, $150,000.

AIRPORTS

BIDS ASKED

Pa., Franklin—AIRPORT—B.A. 9/25—At office Lloyd Arnold, city clk., City Bldg., 1 story administration bldg.; Contr. 5, access road, grading, drainage, turfing, and utilities, Contr. 6, field lighting, at Chess-Lamberton Airport, Plans deposit $25 each. Michael Baker, Jr., Inc., Joseph F. Bontempo, Registered Archt., Baker Bldg., 115 Shields St., Rochester, archt. CD 4/5/49.

† Fla., Cocoa—EXCHANGE SERVICE STATION—B.A. On or about 10/5—U. S. Eng., 575 Riverside Ave., Jacksonville, Zone 1, air exchange service station at Patrick Air Force Base, Brevard Co., Eng. 08-123-51-4. Plans deposit $10.

LOW BIDDERS

Ill., Rockford — AIRPORT — Greater Rockford Airport Auth., Aug. 6, second stage constr. airport, grading, drainage, surf. parking areas, etc., from Rockford Blacktop Constr. Co., 1615 Westchester Dr., $343,353. CD 9/1.

Wash., Seattle—RUNWAY—Port of Seattle, Bell St., Terminal, Zone 1, runway and taxiway lighting and extens., electrical distr. facilities at Seattle-Tacoma Airport, to D. W. Close, 2707 11 Ave. S. W., $91,703. Est. $120,000. Bids 6/31. G. T. Treadwell, ch. engr.

LATIN AMERICA

Colombia, Paz de Dio—National Steel Assoc. of Paz de Rio, Colombia, awarded contract to Arthur G. McKee & Co., 2300 Chester St., Cleveland, O., U. S. A., to design, supervise construction and take bids on equipment for steel mill. $42,000,000. CD 8/19/49.

PUBLIC BUILDINGS

BIDS ASKED

▲ N. J., Passaic—HIGH SCHOOL—B.A. 9/28—Bd. Educ., 18 Belmont Ave., high school, Paulson Ave. $4,400,000. CD 6/8.

R. I., Tiverton—SCHOOL—B.A. 9/28—Town School Dept. Tiverton, 2 story, bsmnt., brick, steel, concrete glassblock school. $400,000. Plans deposit $50. E. M. Corbett, 49 Purchase St., Fall River, Mass., archt. ENR 4/1/48.

Va., Dublin—HIGH SCHOOL—B.A. 9/28—Pulaski County School Bd., Pulaski, Dublin High School. $500,000. Plans deposit $35. Smithey & Boynton, 112 W. Kirk Ave., Roanoke, archts.

Va., Pulaski—SCHOOL—B.A. 9/28—Pulaski, Co., Pulaski, Claremont School. $350,000. Plans deposit $35. Smithey & Boynton, 112 W. Kirk., Roanoke, archts. CD 6/2.

▲ Neb., Lincoln—AUDITORIUM—B.A. 10/4—City, City Hall, municipal auditorium. $2,375,000. CD 10/19/49.

Que., Cowansville—SCHOOL—Bids Asked—School Comm., A. C. Tamer, secy., Cowansville, 2 story, bsmnt., 57x220 ft. school, 37x100 ft. residences, brick, stone,

rein.-con. frame, Ste. Therese St. Approx. $300,000. Crever & Belanger, 5276 Notre Dame de Grace Ave., Montreal, archts. CD 8/15.

LOW BIDDERS

Mo., Fulton—POWER PLANT—Missouri Dpt. P. Health & Welfare, Sam Marsh, dir., Jefferson City, Aug. 25, power plant addn., from J. S. Alberici Constr. Co. 1550 Irving Ave., St. Louis, Zone 20, **$107,000.**

Pa., Cresson—MEDICAL SERVICE UNIT—General State Auth., 18 and Herr Sts., Harrisburg, Sept. 6, general contract medical service unit at Tuberculosis Sanatorium No. 2, from Moyer Bros., 2605 Beale Ave., Altoona, **$312,500.** CD 8/15.

Pa., Scotland—HOUSING—General State Auth., 18 and Herr Sts., Harrisburg, Sept. 6, general contract housing for boys at Pennsylvania Soldiers' Orphan School, from Earle L. Cump, 251 Park Ave., Chambersburg, **$554,324.** CD 8/18.

Va., Denbigh—SCHOOL—Warwick Co., Denbigh, Aug. 30, general contract Marshall Avenue School, from Mottley Constr. Co., Farmville, **$262,393.** Samuel N. Mayo, Sauer's Office Bldg., Richmond, archt.

Wash., Walla Walla—SCHOOL—School Bd., Walla Walla, Hawthorne school and Washington and Lincoln Schools addns., from McCormack Constr. Co., Walla Walla, $324,000. CD 4/26/49.

Wis., Waukesha—HOSPITAL—Waukesha Memorial Hospital, Waukesha, Aug. 29, 3 and 4 story L-shaped, 44x94 ft., 44x84 ft. and 40x44 ft. hospital, from T. S. Willis, Janesville, **$498,949.** CD 8/23.

CONTRACTS AWARDED

Kan., Olathe—COURT HOUSE, etc.—Johnson Co., Leonard White, clk., general contract 3 story, 112x169 ft., rein-con. brick court house and jail, to Chambers & Tarbell, 410 Kansas St., Kansas City, Mo., $725,000. Bids 8/30. CD 8/1.

Mich., Detroit—SCHOOL—City, Bd. Educ., 1354 Broadway, brick, steel Isaac Newton Elementary School Addn. 2, to Rozycki Brothers, 2268 Forest St., **$447,267.** CD 8/21.

▲† Pa., Pittsburgh—GENERAL MEDICAL HOSPITAL—U. S. Eng., 925 New Federal Bldg., Zone 19, general contract general medical hospital, University Dr., to John A. Johnson Sons Co., 268 41 St., Brooklyn 32, N. Y., **$12,323,000;** elevators, to Haughton Elevator Co., 671 Spencer St., Toledo, O., **$470,000.** Bids 8/29. CD 9/5, under LB.

S. D., Vermillion—MEDICAL SCIENCE—State Bd. Educ., Pierre, general contract 3 story medical arts bldg., at University of South Dakota, to Henkel Constr. Co. Sioux Falls, **$430,960.**

† Alaska—POWER PLANT—U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, power plant bldg. and cooling water facilities, at Eielson Air Force Base, dismantling, crating and shipping to Eielson diesel power plant equip. now at Adak, repairing, reinstalling, etc. Inv. No. S95-507-51-8, to E. V. Lane, Anchorage, **$314,728.** Est. $385,814. Bids 8/31. CD 8/23.

COMMERCIAL BUILDINGS

BIDS ASKED

Ill., Oak Park—HOSPITAL—B.A. 9/26—Sisters of Mercy (Misericordia) Hospital, Wisconsin and Monroe Sts., 4 and 6 story, 70,000 sq. ft. brick, stone, hospital addn. **$700,000.** Schmidt, Garden & Erickson, 104 S. Michigan St., Chicago, Zone 3, archts.

Ark., Fort Smith—HOSPITAL, etc.—B.A. 9/28—St. Edwards Hospital, 1411 Rogers St., hospital addns., alterations. Plans deposit $50. Haraison & Mett, Merchants Bank Bldg., archts. CD 2/14.

▲ Tex., Houston—HOSPITAL—B.A. 10/3—Memorial Hospital, 602 Lamar St., 7 to 9 story, 75x125 ft. brick, concrete, hollow tile 164-bed hospital addn. $2,000,000. Kenneth Franzheim, 2306 Crawford St., archt. CD 2/24/49.

Ill., Wheaton—MOTHER HOUSE AND NOVITIATE—B. A. About December—Franciscan Sisters, Mother Florine, provincial, Wheaton, 1 to 5 story, brick, concrete mother house and novitiate, etc. $250,000. Ralph Ranft, 3606 Gravois Ave., St. Louis, 16, Mo., archt.

(Continued on page 86)

Insert: Standard grille TERRAZZO *floor, in a U. S. Veterans Administration hospital. 4" square brass or zinc grilles inserted in* TERRAZZO *floors are time-proven safeguards against static explosion hazards.*

The operating room floor that never needs an operation: *Terrazzo*

■ Hospital floors never need "surgery" when the architect specifies TERRAZZO. Installed for permanence, punishment and performance, TERRAZZO improves with age and thrives on use. Wherever "lifetime" floors are needed, easy-to-keep-clean TERRAZZO is not only just what the doctor ordered—it's what the management welcomes for minimum upkeep.

■ Versatile as an architect's imagination, TERRAZZO provides color, design, and pattern tailored to individual need. Specify TERRAZZO and enjoy low first cost, low maintenance cost, and healthy longevity.

Write for free AIA Kit, the complete reference work about TERRAZZO.

SEE OUR CATALOG IN SWEET'S

THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION, INC.

711 Fourteenth St. N.W. Dept. E Washington 5, D. C.

MOVING, RAISING, HEAVY SHORING, UNDERPINNING

National Operations

E. F. DAVID HOUSE MOVING CO.

Registered Engineers

1548 SO. VANDEVENTER AVE.
ST. LOUIS 10, MO.
Tel. Grand 3092
Established 1886

"Gunite" *Florida Service, Inc.*

air-applied concrete specialists

4063 Ponce de Leon Blvd. Coral Gables, Fla.

- Repair all types Disintegrated Concrete
- Dam Reconstruction and repairs
- Linings and repairs for Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

All work under the supervision of Harvey W. and Victor B. Anderson, using the latest equipment.

Work executed anywhere in the U. S. A. and Latin America

Write for our new illustrated brochure!

DREDGES

HYDRAULIC
● DIPPER ●
CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters
If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1908

Countryside **Today...**

When *Speed* is the Need...Use CECO

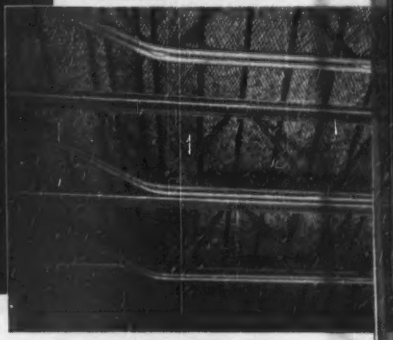
One day you pass a new development in the making, ground is broken, home foundations are in. Then, in just a short, short time, where once there was open countryside, a whole community, spick-and-span new, "has sprung up overnight." Chances are the stores, the school, the theatre . . . yes, most of the light occupancy buildings . . . were constructed with Open-Web Steel Joists. For that is the fastest way ever to build. There's no temporary formwork necessary . . . nothing to take down later on. Open-Web Steel Joists are self-centering . . . are placed on the wall structure and right away rib lath can be laid and concrete poured to form the floor. And while all this is going on, other building

CECO STEEL ®

In construction products **CECO ENGINEERING**

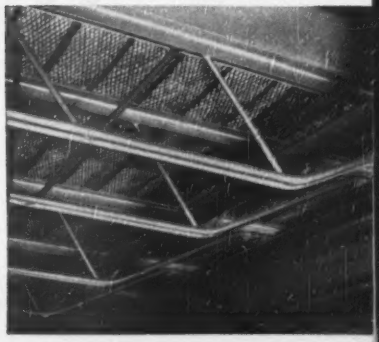
a *Community* **Tomorrow**

Economical — Ceco Open-Web Steel Joists are self-centering. The form work for the concrete slab—usually metal rib lath or steeltex—rests directly on the steel joists without other support from the underside.



Open-Web Steel Joists

Conceals Conduits — Ceco Open-Web Steel Joists provide a ready means of concealing ducts, wiring and piping. Space is saved by direct attachment of ceilings to joists. Time and materials are saved, too.



trades can be on the job doing their special work such as installing steel windows, electric wiring, plumbing and heating. So, when speed gets the call, specify CECO OPEN-WEB STEEL JOISTS. They are fabricated to exact size in the factory, come to the job tagged, ready to install... provide low cost fire resistive buildings. Ceco assures you fast service from five plants: Birmingham, Chicago, Houston, New York and Wheeling, W. Va.

CECO STEEL PRODUCTS CORPORATION

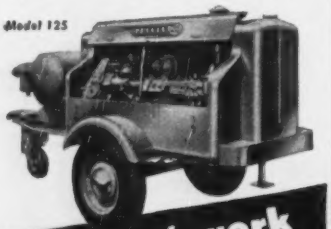
General Offices: 5601 West 26th Street, Chicago 50, Illinois

Offices, warehouses and fabricating plants in principal cities

makes the big difference

Owen
Buckets?
..EVERY ONE!
Yes!—whether the scene of construction activity is concerned with EXCAVATING, DREDGING OR REHANDLING, you'll more than likely "spot" one or many Owen Buckets hard at work, coming up with "A Mouthful at Every Bite" and taking "More Bites per Day." Write TODAY for the Catalog.
OWEN
CLAMSHELL BUCKETS
INSURE A BIGGER DAYS WORK
A MOUTHFUL AT EVERY BITE
THE OWEN BUCKET CO.
6010 Breakwater Ave. Cleveland, O.
Branches: New York, Philadelphia, Chicago, Berkely, Cal.

Model 125



4 days' work now done in 3

with

JAEGER

"new standard" compressors

Jaeger Model 125 runs 2 heavy duty or 3 medium breakers at full 90 lbs. pressure, doing 30% to 40% more work than at 70 lbs. pressure from a 105 ft. machine.

Other Jaeger "new standard" sizes, 75, 185, 250, 365, and 600 ft., give you comparable work increases. Cost no more than smaller old sizes. Send for Catalog and prices.

THE JAEGER MACHINE COMPANY
200 Dublin Avenue Columbus 16, Ohio

FLOORS CAN BE

SHOCK PROOF!
WITH OR WITHOUT PILL

FOR LONG LASTING, HEAVY DUTY
DRIVEWAYS
TRUCKING AISLES
INDUSTRIAL FLOORS
AND THE LIKE

Specify

"ARMOURING"
TRADE MARK

THE ORIGINAL STEEL MESH
FLOOR SURFACE REINFORCEMENT
SHOCK-PROOF
WEAR-PROOF
CRACK-PROOF

• ***Catalog on Request***

IRVING SUBWAY GRATING CO., INC.
5008 27th St., Long Island City 1, N. Y.
1808 Tenth St., Oakland 20, Calif.

(Continued from page 83)

▲ **Calif., Oakland**—HOTEL—Bids Asked—Moody's Hotels, Inc., c/o John C. Warnecke, archt., Financial Center Bldg., Oakland, 100-room Crestfield Hotel. $1,000,000. CD 5/12.

SOON LETS CONTRACT

Calif., Los Angeles—SCHOOL, etc.—soon lets contract—University of Southern California, 3551 University Ave., 5 story Medical School and Research Center. $500,000. Albert C. Martin & Assoc., 533 S. Beaudry St., archts. CD 11/15.

Pa., Warren—HOSPITAL—Warren General Hospital, Warren, soon lets contract, 3 story, 45x80 ft. brick hospital addn. (2 wings), $500,000. Lawrie & Green, 321 W. Front St., Harrisburg, archts. CD 12/10/48.

Tex., El Paso—CHURCH-ADDITORIUM—First Baptist Church, 805 Montana St., soon let contract, church-auditorium. $275,000. Fraser & Benner, Davis & Foster, Monroe & Licht, 405 Bassett Tower, archts. CD 3/10.

▲ **Tex., Houston**—OFFICE, etc.—Prudential Insurance Co. of America, Scanlan Bldg., soon lets contract, 12 story bsmnt., 362,000 sq. ft. 150x225 ft. structural steel, masonry office, concrete pier and beam fdn. and cassion, Approx. $8,000,000, 800-auto carport and asph. paved parking zone, $250,000. Kenneth Franzheim, 2306 Crawford St., archt. Dale S. Cooper & Assoc., 420 Sul Ross St., Houston, engrs. Ward Butterick, 2306 Crawford St., struc. engr. CD 8/29.

▲ **Alta., Edmonton**—BANK, etc.—Imperial Bank of Canada, King and Bay Sts., Toronto, Ont., soon lets contract, 4 story, bsmnt., 96x100 ft. steel, limestone granite branch bank and office Jasper Ave. and 100 St. $1,000,000. Rule-Wynn & Rule, Edmonton, and Arthur J. Everett, Imperial Bank Toronto, Ont., archts. Margison & Babcock, 119 Isabella St., Toronto, Ont., and H. H. Angus & Assoc., 1221 Bay St., Toronto, Ont., engrs.

Ont., Belleville—STORE—Lobleau Groceterias, 14 Bathurst St., Toronto, soon lets contract 1 story bsmnt. concrete, steel, brick store. $250,000. K. W. Bash, engr.

LOW BIDDERS

▲ **Fla., Jacksonville**—BANK—Federal Reserve Bank, c/o Toombs & Co., archts., 127 Walnut St. N. W., Atlanta, Ga., Sept. 8, bank, from Geo. D. Auchter Co., foot of E. 56 St., Jacksonville, $1,812,800. CD 8/18.

Kan., Pittsburgh—HOSPITAL—Mount Carmel Hospital, c/o Sister M. Aloysia, supt., Aug. 30, altering hospital, from M. P. Constr. Co., P. O. Box 567, Carthage, Mo. $317,142. CD 8/14.

Mass., Mt. Herman—SCHOOL—Northfield School, Northfield, 2 story, brick, masonry school for boys, from Wm. Cushman & Son, Inc., 31 Federal St., Greenfield. $317,448. CD 9/5.

Pa., Spangler—HOSPITAL—Miners Hospital, Spangler, Aug. 24, 3 story, bsmnt., 60x95 ft., brick hospital addn. alterations from Moyer Bros., 2603 Beale Ave., Altoona. Approx. $570,225. CD 8/4.

CONTRACTS AWARDED

▲ **Calif., Beverly Hills**—DEPARTMENT STORE—Beverly Hills Development Co., 145 S. Radio St., 4 story, rein.-con. department store, to Wm. Simpson Constr. Co., 816 W. 5 St., Los Angeles. Approx. $4,000,000. Paul E. Jeffers, 816 W. 5 St., Los Angeles, engr. J. W. Robinson Co., lessee. CD 1/14/49.

Calif., Fullerton—DWELLINGS—Malvern Homes, Inc., 116 W. Commonwealth Ave., 55 stucco dwellings in Tract 1423 to Jewett Bros., 116 Commonwealth Ave. Approx. $330,000. C. N. Aldrich, 1834 Dawson Ave., Long Beach, archt.

▲ **Calif., Fairfield-Suisun**—HOUSING—Opt. Air Force, Fairfield-Suisun Air Base, construct, manage and finance, 980 housing units at Fairfield-Suisun Air Base, to National Eng. & Development Co., Box 711, Tampa, Fla., Approx. $9,000,000; construct, to MacDonald, Young & Nelson & Morrison-Knudsen, 351 California St., San Francisco, Calif.

Calif., San Francisco—OFFICE—Hartford Fire Insurance Co., 1720 California St., 2 story, 120x120 ft., rein.-con. office addn., alterations to existing 4 story office, to Dinwiddie Constr. Co., Crocker Bldg., Approx. $565,000. Weihe, Frick & Kruse, 251 Kearny St., archts.

▲ **Fla., Miami**—HOUSING—Enid Corp., c/o contractor, 148 homes, to The Mackle Co., 2818 S. W. 22 St., Approx. $1,000,000.

▲ **Ga., Atlanta**—HOUSING—American Home Builders, Inc., c/o P. N. Wilkinson, archts., 141 Walton St. N. W., Atlanta, 225 housing units, Owner builds, Approx. $1,000,000.

Ill., Cairo—HOSPITAL—Sisters of Holy Cross, c/o Sister M. Helen Frances, Superior, St. Mary's Hospital, Cairo, rein.-con., brick, steel, stone hospital, to McCarthy Bros. Constr. Co., 4903 Delmar Blvd., St. Louis, 8, Mo., $686,390. Bids 6/7. CD 6/28, under LB.

Minn., St. Paul—SCIENCE—Hamline University, 1536 Hewitt Ave., general contract 3 story science bldg. on campus, to G. J. Grant Constr. Co., Como Ave. and N. P. tracks, Est. $650,000. Bids 8/29. CD 8/3.

Mo., St. Louis—DWELLINGS—Volo Voerster Co., Inc., 4053 Lindell Blvd., Zone 8, seventy-four 1 story, 24x32 ft., concrete, frame dwellings, in 7000 and 7100 blocks of Leona Ave., 7100 and 7200 blocks of Sharp and Yates Aves., and 4000 and 4100 blocks of Blow and Roberts Aves., separate contracts. $370,000. CD 2/3.

Mo., St. Louis—BANK—United Bank & Trust Co., Broadway at Washington Ave., Zone 1, bank altera-

tions, imprvs., to Alport Carle Constr. Co., Title Guaranty Bldg., 705 Chestnut St., Zone 1. $250,000. Bernard Bloom, Title Guaranty Bldg., 705 Chestnut St., Zone 1, archt.

Ore., Springfield—DWELLINGS—Bauer-Edmonds, Inc., Medford, 50 dwellings, force account. $250,000. Awarded 9/1. Ormond Bean, Jr., Mead Bldg., Portland, archt.

Pa., Meadville—HOME—Methodist Erie Conference, Inc., 1322 W. 9 St., Jamestown, N. Y., Cribbs Home for Aged to Montgomery Constr. Co., 803 W. Main St., Grove City. $658,588. CD 4/27, under LB.

Tex., Arlington—HOUSING—Browning Constr. Co., 2809 Race St., Fort Worth, 100 addnl. housing units. Owner builds. $785,000. CD 6/5.

Tex., Dallas—DWELLINGS—H. Leslie Hill, 4365 E. Lovers Lane, 50 dwellings, own forces. $250,000. CD 7/10.

Tex., Dallas—DWELLINGS—Wiley Roberts & Sons, 1922 W. Jefferson St., fifteen 2 story brick, rock dwellings, rein.-con. slab fdn., in 31 acre tract in Oak Cliff. Owner builds. $350,000. CD 7/24.

Tex., Fort Worth—DWELLINGS—Southland Terrace, Inc., 801 Commerce St., 50 addnl. single family dwellings, east side of Freeway. Owner builds. $385,000. CD 7/24.

Tex., Houston—DWELLINGS—C. O. Beeler, 2300 Pease St., ten 2 story masonry dwellings, concrete slab fdn. air-conditioned. Owner builds. $350,000. CD 5/24.

Tex., Houston—HOUSING—Berne Constr. Co., 1310 Cheston St., Sec. 5, 100 housing units. Owner builds. $615,000. CD 4/17.

Tex., Houston—HOMES—Garden City Park, Inc., 3434 Arbor St., 100 addnl. negro homes, near here, own forces. $635,000. CD 7/20.

Tex., Houston—SHOPPING CENTER—J. E. Leicher, 2204 Arbor St., 2nd half of shopping center, Holmes and Old Spanish Trail Rds., to Leicher & Leicher, 2204 Arbor St. $300,000. CD 7/21.

Tex., Houston—DWELLINGS—McMillan Homes, Inc., 7948 Harrisburg St., 56 brick, frame dwelling units, concrete slab fdn. Owner builds. Approx. $485,000. CD 6/26.

Tex., Houston—DWELLINGS—W. W. McMillan, 7948 Harrisburg St., 75 dwellings, own forces. $585,000. CD 4/7.

Tex., Houston—DWELLINGS—N. H. Mitchell, E. J. Gracy & Preston R. Plumb, 4550 Griggs Rd., 75 dwellings. Owner builds. Approx. $525,000. CD 12/1.

Tex., Houston—DWELLINGS—Plantation Development Corp., 4660 Holmes Rd., own forces. $560,000. CD 5/26.

Tex., Houston — DWELLINGS — Stahlman Lumber Co., 4007 Greenbriar St., 40 dwellings, on 120 acre tract off Westheimer Rd. Purchase and Hire. $425,000. CD 6/30.

Tex., Houston—DWELLINGS—Dow J. Zabolio & Assoc., West Bldg., 75 dwelling units. Owner builds. $375,000. CD 11/14/49.

Tex., Lubbock—DWELLINGS—Urban Development Corp., Lubbock 100 stone type dwellings. Owner builds. $675,000. CD 7/27.

Tex., Lubbock—DWELLINGS—Urban Development Corp., Lubbock, 100 dwelling units. Owner builds. Approx. $615,000. CD 7/27.

Tex., Pasadena—DWELLINGS—Corporation, c/o H. Tatar, Tatar Lumber Co., 7710 Bowie St., Houston, 75 dwellings. Owner builds. $690,000. CD 4/28.

Tex., San Antonio—HOUSING—F. M. Pierce & Ogden Klein, c/o Otis West, Brady Bldg., Sect. 4, 100 units housing, to Marion Barrett Constr. Co., 1903 Vista Lane, Austin, $575,000. CD 6/20.

Va., Arlington—DEPARTMENT STORE—Hecht Co., c/o contractor, department store to Prescott Constr. Co., 1307 West St. N. W., Wash. D. C. Over $500,000. CD 7/10.

▲ **Va., Camp Lee**—HOUSING—Dpt. of Army, Wash., D. C., construct, manage, finance housing for Army officers and their families to Bush Constr. Co., Flat Iron Bldg., Norfolk, $2,700,000. CD 12/13.

Wash., Moses Lake—HOUSES—Fairbanks-Amick Constr. Co., Moses Lake, 100 houses, day labor. Approx. $850,000. CD 4/17.

Wash., Yakima—HOMES—Yakima Homes, Inc., Yakima, 50 homes in Rose Park area, north from Nob Hill Blvd. between 34 and 36 Sts. to Westland Constr. Co., 1105 Westlake Ave. N., Seattle, Approx. $319,000.

D. C., Wash.—DWELLING—Cory Construction Co., 927 18 St. N. W., fifty 2 story, cinder block dwelling units, Oglethorpe, Nicholson and Second Sts. N. E. Owner builds. $300,000. Awarded 8/12, George T. Santmyers, 2209 L St. N. W., archt.

INDUSTRIAL BUILDINGS

BIDS ASKED

Pa., Phila.—WAREHOUSE—B.A. About 10/1—Penn Fruit Co., 1919 Chestnut St., warehouse, Erie Ave. and I St. Approx. $250,000. The Ballinger Co., 121 N. Broad St., archt. and engr. CD 9/29.

▲ **Ill., Melrose Park**—FACTORY—Bids Asked—International Harvester Co., 180 N. Michigan St., Chicago, Zone 1, 500,000 sq. ft. factory addn. $3,000,000.

▲ **Kan., Wichita**—PLANT—Bids Asked—Derby Oil Co., 420 W. Douglas St., catalytic cracking plant, $2,000,000. CD 7/11.

Wis., Two Rivers—FACTORY—Bids Asked—Aluminum Goods Mfg. Co., 1512 Washington St., Manitowoc, 3 story 140x140 ft. steel, brick factory addn., concrete fdn. W. Fred Dolke, 189 W. Madison St., Chicago, Ill., engr.

SOON LETS CONTRACT

Wis., Green Bay—WAREHOUSE—Green Bay Food Co., 889 School Pl., soon lets contract 1 story, 100x260 ft. warehouse; 1 story, bsmnt., 40x190 ft. curing room; 1 story bsmnt., 60x80 ft. packaging room, steel, brick. J. E. Somerville, 403 W. Walnut St., archt.

CONTRACTS AWARDED

Kan., Kansas City—PLANT—International Paper Co. of New York, Fairfax and Fiberglass Rds., 50,000 sq. ft. paper milk carton plant, to Miller-Davis Constr. Co., Kalamazoo, Mich., Approx. $350,000.

La., Bastrop—COMPRESSOR STATION—Texas Gas Transmission Corp., Commerce Bldg., Houston, Tex., 8,800 hp. compressor station, to Fluor Corp., Deer Park, Tex., Approx. $850,000.

La., Blanchard—COMPRESSOR STATION—Arkansas, Louisiana Gas Co., Slattery Bldg., Shreveport, 4,200 hp. compressor station, to Delta Eng. Corp., 2121 San Felipe Rd., Houston, Tex., $375,000. CD 8/9.

Mich., Detroit—STORAGE—Jack Borin, 12495 Evergreen Ave., 2 story, asbestos, metal storage bldg., Evergreen St. Owner builds, $69,000.

▲ **N. J., Metuchen** — PLANT — Westinghouse Electric Corp., 40 Wall St., New York, N. Y., television mfg. plant, to Austin Co., 16112 Euclid St., Cleveland, O., $4,000,000.

Pa., East Butler—MANUFACTURING—Fritz Moon Tube Co., East Butler, 1 story, 70x600 ft. concrete block, steel mfg. bldg., to D. & T. Brooks, Inc., 2538 8 Ave., Beaver Falls, Approx. $500,000.

Tex., Lubbock—DAIRY PLANT—Bell Ice Cream & Milk Co. Ltd., 619 Avenue H, dairy plant, Purchase and Hire. Approx. $90,000. CD 7/13.

Tex., San Antonio—MARKET STALLS—San Antonio Produce Terminal Market Corp., 310 Produce Row, 120 covered stalls and 140 open market stalls, to H. B. Zachry Co. Inc., Box 2570, Approx. $400,000 and $300,000 respectively. CD 8/25.

W. Va., Wheeling—MANUFACTURING—Wheeling Steel Corp., Wheeling Steel Corp., Bldg., 2 story, 65x120 ft. concrete block mfg. bldg., addn., to H. M. Coast Constr. Co., Fidelity Bldg., Approx. $100,000.

Wis., Fond du Lac—GARAGE—Gibson Co. Inc., 56 N. Main St., 1 story, 64x230 ft. garage, to Immel Constr. Co., 560 N. Main St., Approx. $68,000.

Wis., Menasha—WAREHOUSE—Marathon Corp., River St., 1 story bsmnt., 120x300 ft. and 150x200 ft. rein.-con., brick warehouse addns., to Permanent Constr. Co., 4100 N. 3 St., Milwaukee, Zone 12.

Wis., Milwaukee—WAREHOUSES—F. P. Koske, 1235 S. 41 St., Zone 15, 1 story, 60x160 ft. and 1 story, 60x100 ft. steel, concrete block warehouses, to George Kotze, 4219 W. National Ave., Zone 15. R. A. Sutherland, 264 E. Wells St., Zone 2, archt.

Wis., Two Rivers—FACTORY, etc.—Paragon Electric Co., 1600 12 St., 1 story, 59x158 ft. steel, brick factory and office, to Hoffman Bros. Inc., 1816 10 St. F. W. Raeuber, 1024 S. 9 St., Manitowoc, archt.

UNCLASSIFIED

BIDS ASKED

Nebraska—RURAL DISTRIBUTION LINES—B.A. 9/26—Loup Valleys Rural Electric Membership Assn., Will R. Foch, pres., Ord, 237 mi. rural distr. lines, Sherman, Valley, Greeley, Wheeler and Garfield Counties. Plans deposit $10. Extended date. Raymond H. Reed & Co., 2305½ 13 St., Columbus, engrs. CD 9/7.

† **N. M., Albuquerque** — OIL STORAGE — B.A. About 10/2—U. S. Eng., Box 1538, AEC bulk fuel oil storage, Sandia Base, Serial No. 291-51-28.

† **South Dakota**—RAILROAD RELOCATION—B.A. About 10/3—U. S. Eng. 1709 Jackson St., Omaha, Neb., Chicago, Milwaukee, St. Paul & Pacific R. R. relocation, Stage I, Chamberlain, Spec. CIVENG 25-066-51-25.

† **N. M., Los Alamos**—SERVICE CENTER VAULT—B.A. 10/5—U. S. Atomic Energy Comn., Los Alamos, rein.-con., steel records service center vault, Inv. No. 291-51-26. $75,000. Plans deposit $25.

SOON LETS CONTRACT

Nebraska—RURAL DISTRIBUTION LINES—Niobrara Electric Membership Assn., Hay Springs, soon lets contract 556.5 mi. rural distr. lines, Sioux, Box Butte, Dawes, Sheridan and Cherry Counties. Plans deposit $10. Philip L. Burns, 630 Davenport Bank Bldg., Davenport, Ia., consult. engr. CD 8/11.

Nebraska—RURAL DISTRIBUTION LINES—Panhandle Rural Electric Membership Assn., Cecil Vickers, pres., Alliance, soon lets contract 62.14 mi. rural distr. lines, incl. two sub-stations, Box Butte, Grant and Sheridan Counties. Plans deposit $25. Raymond H. Reed & Co., 2305½ 13 St., Columbus, engrs. CD 9/7.

LOW BIDDERS

Que., Lauzon—DOCK EXTEN.—Dpt. P. Wks., Ottawa, Ont., Aug. 30, West Guide Pier xten., Lorne Graving Dock, from Captain Edward Jourdon, Cap Chat, Approx. $237,216. CD 8/15.

CONTRACTS AWARDED

Ind., Charlestown—DRIVE-IN THEATRE—Fred Belcher, 1437 Hemlock St., Louisville, 300 to 500 car motion picture drive-in theatre on east side of Monroe St.

Dry Subgrades Guaranteed Whenever a MORETRENCH WELLPOINT SYSTEM is used

YEARS OF EXPERIENCE PLUS THE BEST PUMPING EQUIPMENT OF ITS KIND — THAT'S WHY.

This proven method of handling wet excavation profitably is explained in our catalog. We will be glad to send you a copy promptly.

MORETRENCH CORPORATION
90 WEST STREET
NEW YORK 6, NEW YORK
Chicago, Ill. - Tampa, Fla. - Houston, Tex.

KINNEAR Rolling Doors for ANY INDUSTRIAL NEED!

Whether needed in a large steel mill . . . or simply at a small warehouse loading-platform . . . KINNEAR can supply steel rolling doors to fit any requirement. These steel interlocking-slat curtains rise straight up and coil compactly above the lintel! And when shut they supply extra protection against fire, theft and the elements. Available with push-button motor operation from one or several strategic points. Write for details.

The KINNEAR Manufacturing Co.
Factories:
1820-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.
Offices and Agents in Principal Cities

Coiling Doors for Doorways
KINNEAR ROLLING DOORS

just south of jct. with Rte. 3 about 1½ mi. from Charlestown's public square, separate contracts, $60,000.

Miss., Booneville—NATURAL GAS SYSTEM—City, natural gas sys., to Sullivan, Long & Haggerty, Bessemer, Ala., $549,827. Bids 8/22. CD 8/29.

Mo., Neosho—DRIVE-IN THEATRE—Hugh Gardner, Neosho, drive-in motion picture theatre near northwest corner of Camp Crowder Military Reservation south of here on Hy. 71, separate contracts, $75,000.

Ohio—RURAL DISTRIBUTION LINES—Paulding-Putnam Electric Co-operative, Inc., Paulding, 45.8 mi. rural distr. lines and converting 33.6 mi. line, Paulding Co., to Davis-Hydaker Co., Spencerville, $58,457. Castle Eng. Co., 410 Keith Bldg., Dayton, engr. CD 7/13/49.

Pa., Courtney—LOADING FACILITIES—Pittsburgh Consolidation Coal Co., Courtney, facilities for loading coal barges at Mathies Mine, improved harbor will extend 1,455 ft. along west bank of Monongahela River, near here, to Dravo Corp., Neville Island, Pittsburgh. CD 1/8/47.

Texas—OIL LINE—Magnolia Pipe Line Co., Magnolia Bldg., Dallas, 47 mi. 12 in. crude oil loop lines on route between Iatan Station and Corsicana Terminal, Scurry Co., own forces. Approx. $675,000. CD 7/13.

Ontario—RAILWAY LINE—Hydro-Electric Power Comm. for Ontario, 620 University Ave., Toronto, 12 mi. railway line, 5 mi. north of Mattawa, made necessary by construction of La Cave power dam proj., to Therrien Constr. Co. Ltd., 200 Bay St., Toronto, Approx. $205,000. CD 9/21/48.

Ont., Sarnia—REFINERY—Imperial Oil Ltd., 445 S. Christina St., 610 ft. exten. dock at refinery on St. Clair River, to McNamara Constr. Co., Ltd., 42 Industrial St., Leaside, $500,000. Awarded 8/30.

PROPOSED PROJECTS

WATER SUPPLY

Fla., Crestview—City, Crestview, general overhaul and extens. to water-works plant and sewerage disposal sys., $450,000. Smith & Gillespie, Roberts Bldg., Jacksonville, Zone 1, consult. engrs.

Ind., Francisco—Bd. Trustees, John T. Smith, pres. Town Hall, voted $125,000 bonds, water-works plant and system.

Ia., Montezuma—City, water supply and treatment plant, $154,500.

Mass., Dracut—Town, Bd. Selectment, Town Hall, water supply Kenwood Section, $400,000. Gibbs & Hill Inc., Pennsylvania Station, New York, N. Y., engr.

Mass., Halifax—Town, Town Hall, watermains, Approx. $120,000. Whitman & Howard, 89 Broad St., Boston, engrs.

Mass., North Adams—City, P. Wks. Dpt., North Adams, water sys., $450,000. Haley & Ward, 73 Tremont Boston, engrs.

Mass., Peabody—City, P. Wks. Dpt., Peabody, water supply imprvts., $900,000. Hayden-Harding-Buchanan, 828 Park Sq., Boston, Mass., engrs.

▲ Texas—Colorado River Municipal Water Dist., Big Spring, water supply at Midland, $4,000,000; water supply at Big Spring, $3,000,000; water supply at Odessa, $2,000,000 all to come from proposed reservoir in Borden Co. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. Forest & Cotton, Cotton Exchange Bldg., Dallas, engrs. CD 10/21/48.

Tex., Atlanta—City, Atlanta, WW, $225,000. J. M. Loyd, 1620 S. Sneed St., Tyler, consult. engr. CD 8/4.

Tex., Fort Worth—River Oaks, suburb of Fort Worth, c/o John H. Boyd, Mayor, 1144 Greenbriar, Fort Worth, water filter plant, $273,497; and waterline extens., at River Oaks, $150,352. Allied Engineers Inc., 1410 Fort Worth National Bank Bldg., consult. engrs.

▲ Tex., Houston—City, voted bonds, for San Jacinto Dam Projects filter plant, $4,500,000; San Jacinto Reservoir, $1,585,000; structure for San Jacinto Dam $7,500,000; concrete lined canal 28 mi. from San Jacinto Dam to city limits 28 mi. from here, $1,286,000; misc. extens. and imprvs. of water sys., $1,500,000; enlarging existing supply lires from San Jacinto Filter Plant to main sys. lines, $2,267,000; San Jacinto Dam Pumping Plant, $375,000; relocating various pipe lines, $439,000. Horner & Shifrin, Shell Bldg., St. Louis, Mo., Lorenz G. Straub, Minneapolis, Minn. and J. Niels Thompson, 2403 Tower Dr., Austin, Tex., consult. engrs. CD 8/3.

Tex., Rotan and Roby—Fisher County Water Control & Imprvt. Dist. 1, Rotan, voted bonds, 18 in. c.i. water pipe line carrier between Sweetwater and Roby and Rotan. $750,000. CD 8/4.

Wis., Darien—Sanitary Dist. 1, Darien, WW sys. $110,000. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago, Ill., consult. engrs.

SEWERS, WASTE DISPOSAL

Ala., Montgomery—City, City Hall, storm drainage sys. Cloverdale sect. $639,000. R. L. Kenan & Assoc., Bell Bldg., consult. engrs. CD 12/3/46.

Calif., Carpinteria—Carpinteria Sanitation Dist., voted $175,000 bonds, sewage disposal plant.

▲ Ill., Decatur—City, Sanitary Dist. bond election Oct. 17, to finance East Side interceptor, $1,100,000; Stevens Creek interceptor, $1,860,000; 3 pump. stations and force mains, $290,000, exten. treatment plant, $200,000. Warren & Van Praag, Decatur, consult. engrs. CD 4/4.

Ill., Shelbyville—City, Shelbyville, Revising plans, sewage disposal plant, $150,000. Warren & Van Praag, Decatur, engrs. CD 1/ 4/ 6.

Mass., Chelmsford—Town, Bd. Selectmen, Chelmsford, sewerage sys., $450,000. Gibbs & Hill Inc., Pennsylvania Station, New York, N. Y., engr.

Mass., Dracut—Town, Bd. Selectment, Town Hall, sewerage sys., Collinsville Sect., $350,000; sewerage sys., Navy Yard Section, $450,000; sewerage sys., Dracut Centre, $275,000; Gibbs & Hill Inc., Pennsylvania Station, New York, N. Y., engr.

Mass., Nahant—Town, Bd. Selectmen, Town Hall, sewerage treatment plant, $185,000. Whitman & Howard, 89 Broad St., Boston, engrs.

Mich., Iron River—Stambaugh—City, Pub. Wks. Dept., Iron River, sewage disposal plant. $200,000. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago, Ill., consult. engrs.

Minn., Carlton—Village, C. Bellingham, clk., sewage treatment plant, $100,000, Banister Engr. Co., 1549 University Ave., St. Paul, consult. engr.

N. H., Berlin—City, Pub. Wks. Dpt., City Hall, sewerage collection and disposal sys. imprvs. $720,000. The Pierce Consult. Engr. Co., 683 Atlantic Ave., Boston, Mass., engr.

▲ N. J., West New York—Town, sewage treatment plant serving West New York, Weehawken and Union City $1,200,000.

Pa., Hollidaysburg—General State Auth., 18 and Herr Sts., Harrisburg, storm sewers and roads for the proposed expans. of the Hollidaysburg State Hospital. $320,000. A. F. Jones, c/o owner, chh. engr.

Pa., Norristown—West Norriton Twp., 14 Orchard Lane, sanitary sewer collection sys., West Norriton Twp. $813,680. Albright & Friel, Inc., 121 S. Broad St., Phila., consult. engr. CD 9/22/48.

Tex., Fort Worth—River Oaks suburb of Fort Worth, John H. Boyd, 1144 Greenbriar St., Fort Worth, sanitary sewer collection lines, laterals, lift station, manholes, etc., $85,822; sewage treatment plant, $145,808; Allied Engineers Inc., 1410 Fort Worth National Bank Bldg., consult. engrs.

W. Va., Marmet—City, sewage treatment plant and interceptor sewers, $200,000. J. E. Settle, Payne Bldg., Charleston, consult. engrs.

Wis., Darien—Sanitary Dist. 1, Darien, sanitary sewers, treatment plant, $140,000. Consoer, Townsend & Assoc., 351 E. Ohio Ave., Chicago, Ill., consult. engrs.

Wis., Neenah—City, trunk sewer from Main to Cecil Sts. $150,000.

Alaska, Valdez—City, City Council, Valdez, sewerage sys. $160,000. F. J. Toner, Juneau, consult. engr.

Ont., Cochrane—Town, Cochrane, sewerage sys. and paving $200,000. Kilborn Eng. Co. Ltd., 137 Wellington St. W., Toronto, engrs.

BRIDGES

▲ Neb., Omaha—North Omaha Bridge Assn., 2912 Ames Ave., bridge over Missouri River at north side. $2,000,000. Harrington & Cortelyou, 1024 Baltimore Ave., Kansas City, Mo., consult. engrs.

Tex., Beaumont—City, establishment of underpasses and overpasses eliminating major grade crossings, opening new street channels. $750,000. DeLeuw Cather & Co., 150 N. Wacker Dr., Chicago, Ill., consult. engrs. R. C. Black, city engr. CD 8/21.

Wash., Port Townsend—Jefferson Co., Courthouse, deck girder bridge with rein-con. girder approaches from Hadlock to Indian Island, $234,000. H. Hadley, Seaboard Bldg., Seattle, Zone 1, consult. engr. K. J. Jones, co. engr.

Wash., Richland—Benton Co., Prosser, 710 ft., rein.-con. box girder bridge over Yakima River near here, $100,000. H. Hadley, Seaboard Bldg., Seattle, consult. engr. and C. D. Kinder, co. engr.

▲ Wash., Tacoma—City, City Hall, bond election Nov. 7, bridge across Port-Industrial waterway, $1,000,000. D. E. Morris, city engr. CD 3/20.

STREETS AND ROADS

Calif., Oakland—City, City Hall, imprv. McAdam St. between Broadway and Mather St., etc. and constr. underpass structure, $471,873. Chas. A. Reed, City Hall, city engr. CD 5/16/45.

Tex., Beaumont—City, opening 12 short street sections providing through traffic where old railway yards were, $800,000. DeLeuw, Cather & Co., 150 N. Wacker Dr., Chicago, Ill., consult. engrs. R. C. Black, city engr. CD 8/21.

▲ Tex., Lubbock—City, 25 mi. permanent type street paving. $2,000,000. G. K. Harris, city engr. CD 4/28/49.

EARTHWORK, WATERWAYS

Tex., Beaumont—City, filling in Neches old turning basin to provide traffic outlets. $350,000. DeLeuw, Cather & Co., 150 N. Wacker Dr., Chicago, Ill., consult. engrs. R. C. Black, city engr. CD 8/21.

AIRPORTS

Ky., Ashland—AIRPORT—City, airport, incl. acmin. bldg. and runways. $263,200. CD 12/2/44.

▲ † N. J., Lakehurst—HOUSING—U. S. Dpt. Navy, Pub. Wks. Office, Phila., Naval Base, Phila., Pa., Title 8, 230 unit housing project at Naval Air Station, Approx. $2,000,000.

▲ † Tex., Waco—AIR FORCE BASE—U. S. Govt., c/o Col. J. T. Sprague Connally Air Force Base, U. S. Hy. 81, Waco, air force base addn., incl. buildings. $1,800,000.

Puerto Rico—AIRPORT—Puerto Rico Transportation Auth., San Juan, second phase of the International Airport, incl. two runways, pavement of parking space, construct all underground tunnels necessary for installing service facilities, etc. final plans for main bldg. and maintenance bldg. pumping station. Knappen, Tippetts, Abbett Engr. Co., 62 W. 47 St., New York, N. Y. and local firm of Toro, Ferrer and Torreqros, engrs. CD 10/18/48.

LATIN AMERICA

Brazil—Republic of Brazil, c/o Aeronautical Institute, Rio de Janeiro, heavy concrete type runways at Galeao Airport, Rio's International Airfield, $2,000,000; 8,000 to 12,000 ft. concrete type airport runways at Galeo, $1,500,000.

Brazil, Sao Paula—Republic of Brazil, c/o Aeronautical Institute, Rio de Janeiro, 4,000 to 8,000 ft. concrete type airport runways. $1,000,000.

Mexico, La Paz—Varadero de La Paz, Alejandro Abaroa, Gil, S. de R. L. Francisco I. Madero, 125, La Paz, B. C. Mexico, plans shipyard. $750,000.

Mexico—Mexican Federal Govt., Dpt. of P. Wks., Mexico City, plans new River Rd. from Nuevo Laredo to Falson Dam Site (USA-Mexico) 90 mi. $1,500,000.

PUBLIC BUILDINGS

Ark., Fayetteville—HIGH SCHOOL—Fayetteville School Bd., Fayetteville, plans by Paul Young, Jr., Fayetteville, high school. $820,000.

Ark., Tucker—PRISON FARM—Arkansas State Prison Bd., Little Rock, buildings at prison farm. $650,000.

▲ Calif., Modesto—HOUSING—Public Housing Auth. of Stanislaux Co., Courthouse, plans by Donald Powers Smith, 583 Market St., San Francisco, 150 cement block dwelling units. $1,200,000.

▲ Conn., New Haven—HOUSING—City of New Haven Housing Auth., City Hall, plans by Douglas Orr, 111 Whitney Ave., New Haven, 300 unit housing project, Fitch St. $4,037,000. CD 8/29.

Conn., Terryville—SCHOOL—Town of Plymouth, Jos. Karper, 1st selectman, Town Hall, Plymouth, plans by Carl J. Malmfeldt & Assoc., 36 Pearl St., Hartford, concrete, steel high school Clark Site. $500,000. CD 8/25.

▲ Ill., Chicago—HOUSING—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, plans by Sidney H. Morris & Assoc., 134 N. Lasalle St., Zone 2, 300 unit housing, 95 and Wentworth Sts., Zone 20, $2,100,000; plans by Naess & Murphy, 80 E. Jackson St., Zone 4, 500 unit housing, 134 St. and St. Lawrence Ave., Zone 27, $3,500,000; plans by Loebl Schlossman & Bennett, 333 N. Michigan St., Zone 1, 300 unit housing, 105 St. and Oglesby Ave., Zone 17, $2,100,000; plans by Skidmore Owings & Merrill, 100 W. Monroe St., Zone 3, 600 unit housing along North Branch of Chicago River between Foster and Bryn Mawr, Zone 25, $4,000,000; plans by Louis R. Solomon & Jos. N. Gutnayer, 61 W. Superior St., Zone 10, 100 unit housing, corner Oakwood Blvd. and Lake Park Ave., $700,000. CD 2/2.

Ill., Octavia—SCHOOL—School Bd., Octavia, plans by Scott Keiley, Champaign, Senior High School. $750,000.

Ky., Madisonville—SCHOOL—City and Hopkins Co. Bd. Educ., Madisonville, plans by H. Lawrence Casner, 53 N. Main St., 2 or 3 story, bsmnt., brick, high school addn. $500,000.

Md., Annapolis—SCHOOL—Anne Arundel Co. Bd. Educ., plans by Harder & Dressel, Glen Burnie, Junior-Senior High School, in Brooklyn Park. $700,000.

▲ Md., Baltimore—SCHOOL—Baltimore Co. Bd. Educ., Towson, plans by Smith & Veale, 2127 N. Charles St., 2 story, brick, concrete, cinder block, steel high school, Wise and Merritt Aves., near here. $1,000,000. M. R. Baker, Towson, consult. engr. CD 1/27/44.

Md., Baltimore—DWELLINGS—City of Baltimore Housing Auth., 709 E. Eager St., plans by A. S. Cochran, 411 N. Charles St., and Wrenn, Lewis & Jencks, 10 W. Mulberry St., four hundred dwellings, Albemarle, Exeter, Plowman and Pratt Sts. CD 7/10.

Md., Baltimore—DWELLINGS—Housing Auth. of Baltimore, 709 E. Eager St., plans by Palmer, Fisher, Williams & Nes, 1020 St. Paul St., six hundred and fifty dwellings, Orleans, Lexington, Caroline and Fayette Sts. CD 7/19.

▲ Md., Cockeysville—SCHOOL—Baltimore Co. Bd. Educ., Towson, plans by Henry Powell Hopkins, 10 E. Mulberry St., Baltimore, brick, cinder block, concrete, steel Hereford High School north of Cockeysville. $1,000,000. Morris R. Baker, Towson, constr. engr.

Md., Ellicott City—SCHOOL—Howard Co. School Comrs., John E. Yingling, supt., Court House Annex, 1 story, brick high school on 30 acre site, Waterloo Rd., Jonestown. $800,000.

(Continued on page 90)

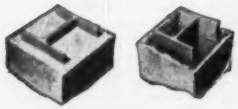
From Floor to Roof:

Slash Costs and Improve Quality With Miracle Zonolite* Vermiculite Aggregates!

DRY, WARM, ON-THE-GROUND FLOORS

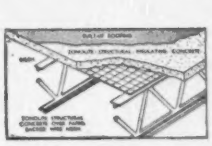
Just mix Zonolite aggregate with Portland cement—it gives you an amazing insulating concrete that prevents heat loss and lag; blocks condensation. Tests show up to 17.5° higher temperature readings under ordinary concrete than under Zonolite—proof that Zonolite blocks heat loss to the ground. Decay, vermin, and fireproof—Zonolite concrete floors never have to be replaced. An ideal base for radiant heat coils . . . can be poured right on the ground.

OLD WAY! *NEW WAY!*



FAST FIREPROOFING OF STRUCTURAL MEMBERS

Compare the old and new methods shown above—you'll see the tremendous savings in weight and material that Zonolite plaster makes possible. Recent tests give 4-hour rating to steel columns protected by metal lath and 1½" of Zonolite plaster. For suspended ceilings, (see above) Zonolite provides extreme weight reduction combined with greater fire safety. In homes, Zonolite plaster for walls and ceilings provides up to 400% more fire protection. Resists chipping and cracking, too.



TIME-SAVING, COST-SAVING ROOFS

Lightweight, insulating Zonolite concrete is ideal for structural short-span roof decks (see above). In one operation you have both a structural deck and the necessary insulation for winter warmth and summer coolness . . . plus the maximum in fire protection. Yet Zonolite vermiculite concrete weighs only ⅛ as much as ordinary concrete . . . reduces handling time of materials, reduces costs . . . can be poured right over existing roofs!

Versatile Zonolite Indispensable in Modern Construction

For lightweight insulation and fire safety, demand Zonolite vermiculite aggregates. Zonolite plaster weighs only ⅓ as much as ordinary plaster. Zonolite concrete weighs only ⅛ as much as regular concrete. Yet they are practically indestructible . . . vermin and decay proof . . . capable of withstanding the most rigid fire tests with outstandingly better results. Zonolite aggregates save up to 87% of handling time; workers maintain higher efficiency, more hours per shift. Where fire-safe, permanent insulation of homes is desired, use Zonolite Vermiculite Insulating Fill.

ZONOLITE COMPANY

Dept. EN-90, 135 S. LaSalle St. • Chicago 3, Ill.

**Zonolite is a registered trademark*

ZONOLITE BRAND VERMICULITE AGGREGATES

Zonolite Company, Dept. EN-90
135 S. LaSalle St., Chicago 3, Ill.
Gentlemen:
Please send me complete details on
( ) Zonolite plaster,
( ) Zonolite concrete,
( ) Zonolite acoustical plaster,
( ) Zonolite insulation.
I understand that this information is free and incurs no obligation on my part.

Name.....*Title*.....

Address.....

City.....*Zone*.....*State*.....

KEEP YOUR CONVEYOR BELTS GOING

FLEXCO H D RIP PLATES are used in repairing rips and patching conveyor belts. Their use saves expensive replacements and extended shutdowns.

● Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco belt fasteners. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.

FLEXCO H D BELT FASTENERS make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Six sizes in steel and alloys.

Bulletin F-100 shows exactly how to make tight butt joints in conveyor belts with Flexco. Also illustrates step by step the latest practice in repairing rips and putting in patches.

FLEXIBLE STEEL LACING CO.
4656 W. Lexington St., Chicago

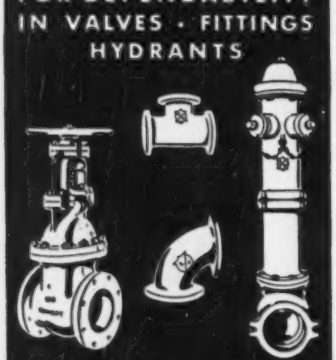
Write for your copy.

FLEXCO HD BELT FASTENERS

Sold by supply houses everywhere

SPECIFY KENNEDY

FOR DEPENDABILITY IN VALVES · FITTINGS HYDRANTS



THE KENNEDY VALVE MFG. CO.
1066 EAST WATER ST.
ELMIRA, NEW YORK

▲ **Md., Parkville**—SCHOOL—Baltimore Co. Bd. Educ., Towson, plans by Palmer, Fisher, Williams & Nes, 1020 St. Paul St., Baltimore, 2 story, brick, concrete, cinder block, steel school. $1,000,000.

▲ **Mass., Malden**—HOUSING—City of Malden Housing Auth., plans by A. A. Dirlam, 673 Boylston St., Boston, 250 unit housing project near Everett line. $2,500,000.

▲ **Mass., South Boston**—HOUSING—First Naval Dist. Headquarters, 495 Summer St., Boston, housing for officers and families. $3,020,000.

▲† **Mass., Winthrop**—HOUSING—First Naval Dist. Headquarters, 495 Summer St., Boston, Zone 10, 127 unit housing. $1,270,000.

Mich., Caro—HOSPITAL—State, A. N. Langius, dir. Bldg. Div., 115 State Office Bldg., Lansing, plans by Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, brick, steel infirmary unit at Caro State Hospital. $700,000.

Minn., Montevideo—COURTHOUSE—Chippewa Co., A. C. Erickson, aud., plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, bond election Nov. 7, court house. $400,000. CD 12/15/43.

▲ **N. Y., Brooklyn**—HOUSES—New York City Housing Auth., 63 Park Row, New York, Zone 7, Van Dyke Houses, 1,450 apartments on site bounded by Powell St., Stone, Sutter and Livonia Aves. $19,000,000.

▲ **N. Y., Jamaica**—HOUSES—New York City Housing Auth., 63 Park Row, New York, Zone 7, South Jamaica Houses Extension, 600 apartments, on site bounded by 160 St., Brinkerhoff Ave., 158 St., 109 Ave., 159 St., 108 Ave., 107 Ave. and South Rd. $8,000,000. CD 1/5/45.

▲ **N. Y., New York**—DOMESTIC RELATIONS COURT—Dpt. P. Wks., Municipal Bldg., plans by Henry V. Murphy, 1 Hanson Pl., Brooklyn, Zone 17, 6 story domestic relations court, Adams and Johnson Sts. $2,135,000. CD 8/22/45.

▲ **N. Y., New York**—HOUSES—New York City Housing Auth., 63 Park Row, Zone 7, Jefferson Houses, 1,498 apartments, on site bounded by First Ave., 112 St., Third Ave. and 115 St. $20,000,000.

▲ **N. Y., New York**—HOUSES—New York City Housing Auth., 63 Park Row, Zone 7, George Washington Houses, 1,512 apartments on site bounded by 97 and 104 Sts., Second and Third Aves. $20,000,000.

N. Y., West Babylon—HIGH SCHOOL—Bd. Educ., West Babylon, addn. and alterations to elementary and Junior High School bldg. $554,000.

▲ **N. C., Lumberton**—HOUSING—Lumberton Housing Auth., John Tudor, chn., Lumberton, plans by John J. Rowland, Kinston, low rent housing, 95 units for Negroes, 30 units for Whites. $1,000,000. CD 3/21.

O., Northridge—SCHOOL—Northridge Twp. Bd. Educ., E. F. Coy, clk., bond elertion Sept. 19, elementary school, $410,000. Walker, Norwick & Templin, 1301-4 American Bldg., Dayton, archts.

▲ **Pa., Kingston**—HOUSING—Luzerne County Housing Auth., Courthouse, Wilkes-Barre, rental housing proj. $1,070,130.

Pa., Perryopolis — HOUSING — Fayette County Housing Auth., Courthouse, Uniontown, construct rental housing proj., duplex, 2 story brick veneer with bsmnts. $400,000.

▲ **Pa., Wilkes-Barre**—HOUSING—Luzerne County Housing Auth., Courthouse, Wilkes-Barre, rental housing proj. $1,070,130.

▲† **Pa., Willow Grove**—HOUSING—U. S. Navy, Pub. Wks. Office, Phila. Naval Base, Phila., 124 unit Title 8 Housing Proj. $1,116,000.

▲ **R. I., Pawtucket**—HOUSING—Pawtucket Housing Auth., Pawtucket, plans by Charles A. Maguire & Assoc., 1015 Turks Head Bldg., Providence 225 unit low rent housing project. Approx. $2,250,000. CD 8/23.

▲ **R. I., Providence** — SCHOOL — City School Dept., Providence, elementary school, Fox Point. $1,500,000. CD 2/20/48.

Tenn., Murfreesboro — HOSPITAL — Rutherford Co., Murfreesboro, plans by Howard, Hickerson & Jordan, Inc., 304½ 3rd Ave., Nashville, hospital addn. $537,000.

Tenn., Paris—HOSPITAL—Henry Co., Paris, plans by J. Frazier Smith, Inc., Goodwyn Institute Bldg., Memphis, hospital. $925,000.

Tenn., Union City—HIGH SCHOOL—Obion Co., Union City, plans by Raymond Spencer & Assoc., 1st Natl. Bank Bldg., Memphis, high school. $435,000.

Tex., Honey Grove—HOUSING—Honey Grove Housing Auth., R. M. McCleary, chn., Honey Grove, 80 low-rental housing units. $560,000.

Tex., Rockwall—HOUSING—Rockwall Housing Auth., Dr. Tom Kunkler, chn., 100 low-rental housing units. $700,000.

▲ **Tex., Terrell**—DORMITORIES—Board for Texas State Hospitals & Special Schools, 45 and Lamar Sts., Austin, plans by Walter C. Moore, Jr., superv. archt., 2504 Woolridge Dr., Austin, mens dormitory wing, $619,000; women's dormitory wing, $500,000. Tatum & Quade, 2812 Fairmount St., Dallas, archts. CD 8/31.

▲ **Va., Richmond** — HIGH SCHOOL — City, City Hall, plans by Carneal & Johnston, Atlantic Life Bldg., 6 and Main Sts., construct Armstrong High School for Negroes addn. $2,275,000.

▲ **Wis., Fond du Lac**—SAFETY—City and Fond du Lac Co., plans by F. J. Stepnoski & Son, 104 S. Main St., safety bldg. $1,000,000.

Wis., La Crosse—INFIRMARY—La Crosse Co., La Crosse, plans by Boyum, Schubert & Sorenson, Hoeschler Bldg., 3 story, 50x229 ft. concrete, brick infirmary addn. $600,000.

Wis., Two Rivers—SCHOOL—Bd. Educ., Two River, plans by Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, 1 and 2 story vocational school addn. $500,000.

Que., Arvida—SCHOOL—School Comn., Y. Morrier, secy., plans by Desgagne & Boileau, 181 Racine St., Chicoutini, 20-classroom school. Approx. $500,000. CD 8/4.

COMMERCIAL BUILDINGS

▲ **Ark., North Little Rock**—HOUSING—North Shore Housing Corp., 509 W. 16 St., housing, $2,000,000.

▲ **Calif., San Francisco**—OFFICE—Equitable Life Assurance Society of U. S., 315 Montgomery St., 15 story office, downtown area, Approx. $1,750,000.

▲ **Ill., Chicago**—DEPARTMENT STORE—Sears, Roebuck & Co., North Ave. and Harlem St., plans by Carr & Wright, Inc., 333 N. Michigan St., two and three story, bsmnt., steel, concrete, brick, glass department store, air-conditioning Harlem and North Aves. $3,000,000. CD 8/31.

▲ **Ill., Rockford**—HOSPITAL—Rockford Memorial Hospital Assocs., 105 Douglas St., plans by Hubbard & Hyland, 303 N. Main St., memorial hospital, $1,000,000. Perkins & Will, 309 W. Jackson St., Chicago, Zone 6, consult. archts.

▲ **N. Y., Forest Hills**—APARTMENT—Forest Properties, c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn, Zone 2, 6 story apartment, 71 Ave. and 110 St. $1,350,000.

N. Y., New York—APARTMENT—Peter H. Agens, c/o Tito Di Vincenzo, archt., 254 W. 54 St., Zone 19, 6 story apartment, Kingsbridge Terrace and Heath Ave. $600,000.

▲ **N. Y., New York**—APARTMENTS—81 Street Madison Corp., 595 Madison Ave., Zone 22, plans by Arthur Weiser, 20 E. 53 St., Zone 22, two apartments, Franklin D. Roosevelt Dr. between 53 and 54 Sts. $4,100,000.

▲ **N. Y., New York**—APARTMENTS—Sheridan Associates, Harry Landes, pres., 20 Broad St., Zone 5, plans by H. I. Feldman, 415 Lexington Ave., Zone 17, 6 story apartments, on site bounded by 8 and 9 Sts., Broadway and University Pl. $5,000,000.

N. Y., New York—MUSEUM—Whitney Museum of American Art, 10 W. 8 St., Zone 11, plans by Augusta L. Noel, 2 W. 45 St., Zone 19, 4 story museum, W. 54 St. $650,000.

Pa., Malvern—DORMITORY, CHAPEL—St. Josephs in The Hills, c/o John B. Kane, archt., 112 S. 16 St., Phila., dormitory and chapel. $500,000.

▲ **Tex., Houston**—DWELLINGS—Meadowbrook Building Co., 7801 Howard Dr., plans by H. D. Frankfurt 2539 Southgate St., Houston, 60 shingle and wood siding dwellings near Winkler Dr., $600,000; 65 frame, shingle and wood siding dwellings near Howard Dr., $650,000.

Tex., Port Arthur — HOSPITAL — St. Marys Hospital, Port Arthur, 100-bed hospital unit, $900,000.

Tex., San Antonio—DWELLINGS—H. B. Zachry Co., Box 2570, 20 masonry dwellings, concrete slab fdn, Unit 2, Monticello, $400,000.

Utah, Salt Lake City—PARCEL POST—Union Pacific R.R. Co., W. C. Perkins, ch. engr., 1416 Dodge St., Omaha 2, Neb., plans by Ashton, Evans & Brazier, 24 S. West Temple St., concrete, brick bldg. to be leased to U. S. Post Office Dept. as parcel post station.

Wash., Tacoma—HOUSING—Northwest Properties, Inc., Vance Bldg., Seattle, Zone 1, thirty 4-family housing units in northwestern part of city. $600,000.

▲ **Alta., Edmonton**—HOTEL—Crystal Hotel, Ltd., Edmonton, plans by C. D. Goodman, 1818 Sherbrooke St. W., Montreal, Que., and Dewar, Canston & Stevenson, Edmonton, 210 room rein.-con. hotel, stone facing on ground floor, brick facing for upper floors, in downtown area. Approx. $1,750,000. CD 3/27.

INDUSTRIAL BUILDINGS

▲ **Calif., Hanford**—COMPRESS—Haslett Compress Co., Port of Stockton, Stockton, 275,000 sq. ft. rein.-con. cotton compress bldg. $1,000,000.

Ky., Louisville—LABORATORY—American Raciator & Standard Sanitary Corp., 1541 S. 7 St., plans by Joseph H. Kolbrook, Starks Bldg., research laboratory, $300,000. CD 5/12.

▲ **Ky., Louisville**—GENERATING UNIT—Louisville Gas & Electric Co., 311 W. Chestnut St., plans by H. M. Byllesby & Co., 135 S. La Salle St., Chicago, Ill., impry., enlarging electric generating unit at Paddy Run Station on Ohio River. $8,600,000. CD 8/17.

▲ **Mich., Wayne**—PLANT—Lincoln Mercury Div., Ford Motor Co., Benson Ford, gen. mgr., 6299 W. Warren, Detroit, plans by Giffels & Vallett, Inc., 1000 Marquette Bldg., Detroit, 1 story, concrete steel, glass assembly plant, Michigan Ave. $10,000,000. CD 8/4.

Miss., McComb—PLANT—Kraft Foods Co., 500 N. Peshtigo St., Chicago, Ill., cheese plant, $800,000.

N. Y., Cold Spring Harbor—LABORATORY—Carnegie Institute of U. S. Dept. of Genetics, Cold Spring Harbor, laboratory bldgs. addn. to house radio-active isotope equip. $500,000.

▲ **O., Niles**—POWER PLANT—Ohio Edison Co., Walter H. Sammis, pres., 47 N. Main St., Akron, 200x250 ft., concrete, steel, brick steam-electric power plant on Mahoning River near here, 350 sq. ft. sub-station for transforming and switching facilities; 2 story, 30x60

ft. office, shop and storeroom sect. and screen house, etc. $20,600,000.

Okla., Enid—GRAIN ELEVATOR—Union Equity Co-operative, Enid, grain elevator addn. $900,000. Roberts & Schaefer Co., 130 N. Wells St., Chicago, Ill., consult. engr. (Correction—engineer). CD 8/3.

▲ **Okla., Ponca City**—REFINERY—Cities Service Oil Co., Ponca City, refinery expansion, modernization. $1,750,000. CD 8/31.

Okla., Tulsa—GROCERY HOUSE—Hale Halsell Grocery Co., McAlester, 250x350 ft., wholesale grocery house, Sheridan Rd. $400,000.

Okla., Tulsa—WAREHOUSE, etc.—Oklahoma Tire & Supply Co., Pine St., warehouse and office, Pine St. and Sheridan Rd. $750,000.

▲ **Pa., Phila.**—PLANT—Paper Manufacturers Co., 5 and Willow Sts., plans by Clarence L. Caspary, 1400 Penn Square, mfg. plant and office. $1,500,000. Industrial Operations, Inc., Herbert A. Bogard, 966 N. Meridian St., Indianapolis, Ind., consult. engr. CD 10/28/48.

▲ **S. C., Clinton**—MILL—Clinton Cotton Mills, Clinton, mill addn. $1,250,000.

Tex., Dallas—PLANT—Gates Rubert Co., 1710 N. Market St., 40,000 sq. ft. concrete, steel, masonry warehouse and shop, in Trinity Industrial area. $300,000.

Tex., Dallas—PLANT—Gates Rubbert Co., 1710 N. Marplans by Teffland & Ault, 804 E. Goodwin Ave., 22,000 sq. ft. concrete and prefab. steel warehouse. $100,000.

Tex., Fort McKavett—PUMP STATION—Humble Oil & Refining Co., 1216 Main St., Houston, crude oil pipe line pump station, near Marble Falls. $300,000.

Tex., San Antonio—FACTORY—Alamo Frosted Foods, Inc., 1428 S. W. Military Dr., food factory expansion. $100,000.

Tex., Seminole—STORAGE and SERVICE—Southwestern Bell Telephone Co., Akard and Jackson Sts., Dallas, masonry storage and service. $100,000.

Tex., Warda—PUMP STATION—Humble Oil & Refining Co., 1216 Main St., Houston, crude oil pipe line pump station near Big Lake. $350,000.

Wash., Spokane—BREWERY—Sicks' Spokane Brewery, Inc., W. 829 Broadway, brewery addn. with cellars and refrigerating equip. $750,000.

Wis., Milwaukee—SERVICE and PARTS—Hall Chevrolet Co. Inc., 3209 W. North Ave., Zone 8, plans by Wm. G. Herbst & Assoc., 1249 N. Franklin St., Zone 2, 2 story, 88x120 ft. and 1 story, part bsmt., 50x100 ft. steel, brick service and parts bldg.

Wis., Racine — FACTORY — Massey-Harris Co., 1721 Packard Ave., plans by Al J. Seitz, 216 5 St., 1 story, 104,000 sq. ft., steel, brick, block factory addn.

UNCLASSIFIED

Iowa—RECREATIONAL FACILITIES—State Conservation Comn., Des Moines, Imprvs., recreational facilities at Rock Creek Recreational Proj., near Kellogg, Jasper Co. $61,617; and recreational facilities at Rock Creek (stream), Washington Co., $60,500, Brown Eng. Co., 322 KP Bldg., Des Moines, consult. engr.

▲ **Mass., Boston**—DOCK WAREHOUSES—Port Boston Auth., Commonwealth Pier 5, South Boston, plans by Drummey-Duffill, Inc., 80 Boylston St., Imprvs. to dock warehouses admin. bldg., Castle Island, $1,100,000. CD 4/17/44.

Mass., Lawrence—SWIMMING POOL—City, Eng. Dpt., City Hall, outdoor swimming pool O'Connell Park, $100,000.

Mo., University City (St. Louis 5, P. O.)—DRIVE-IN THEATRE—Ansell Amusement Co., Empress Theatre Bldg., 3616 Olive St., St. Louis, Zone 8, 700 car drive-in motion picture theatre on 7 acre site, Olive and Midland Blvds. west of Heman Park, $100,000.

Pa., Torrance—UTILITY LINES, TUNNELS—General State Auth., 18 and Herr Sts., Harrisburg, utility lines and tunnels to the proposed tubercular patients bldg. at Torrance State Hoscpital. $152,000. A. F. Jones, c/o owner, ch. engr.

Texas—PIPE LINE—Humble Pipe Line Co., Humble Bldg., Houston addnl. 30 mi. 8 in. crude oil pipe line from Baltinger Station area northwest to Odom Station area, Runnels Co. $175,000.

Tex., Angleton—LIVESTOCK RESEARCH PROJECT—Texas Experiment Station and Texas Prison Bd., c/o State Bldg., Austin, livestock research project, on 1000 acre tract on Darrington Prison Farm. $200,000.

▲ **Tex., Beaumont**—RAILWAY—City, relocation main KCS railway tracks and yards from downtown into east and southeast city area, removing all tracks from Railroad Ave., $500,000; relocation of Southern Pacific Mid-town yards to an outlying area, $500,000. DeLeuw, Cather & Co., 150 N. Wacker Dr., Chicago, Ill., consult. engrs. R. C. Black, city engr. CD 8/21.

Tex., Houston—RELOCATION RAILWAYS—City, voted bonds relocating railway lines now in San Jacinto Dam area, $550,000. Horner & Shifrin, Shell Bldg., St. Louis Mo.; Lorenz G. Straub, Minneapolis, Minn. and J. Niels Thompson, 2403 Tower Dr., Austin, consult engrs. CD 8/3.

▲ **Ontario**—POWER EXPANSION—Ontario Hydro-Electric Power Comn., University Ave., Toronto, Niagara Falls power expansion, tunnel under city of Niagara Falls, new power house at Queenston, cleaning of present Hydro-Canal. $200,000,000.

Que., Quebec City—RECREATION CENTER—City, F. X. Chouniard, city clk., recreation center at Victoria Park. Approx. $250,000.

Erect your Structural Steel—

with a man—
a maul—
and a wrench!

Dardelet "Rivet Bolts" make it possible for you to do just that. And that includes all kinds of building jobs—from the smallest to the largest. These self-locking "Rivet Bolts" are unexcelled for holding steel members together—they help you cut costs without any sacrifice to safety. Besides eliminating the need for expensive heating and driving equipment, they are stronger and faster to handle than rivets. Experience has proved their superiority.

For complete information, and a sample Dardelet "Rivet Bolt," simply fill in and return the coupon.

SEND FOR SAMPLE "RIVET BOLT"

United States Steel Supply Company
Dept. B-90, 208 S. La Salle St., Chicago, Ill.
Without obligation on my part, please send me a sample Dardelet "Rivet Bolt" and literature on its use.

Name..... Title.....
Firm Name.....
Street.....
City..... Zone.... State.....

UNITED STATES STEEL SUPPLY COMPANY
USS STEELS SERVICE

When you deal with us, you get SERVICE PLUS!

UNITED STATES STEEL SUPPLY COMPANY

Warehouses and Sales Offices:
BALTIMORE • BOSTON • CHICAGO • CLEVELAND • LOS ANGELES • MILWAUKEE
MOLINE, ILL. • NEWARK • PITTSBURGH • PORTLAND, ORE. • SAN FRANCISCO • SEATTLE
ST. LOUIS • TWIN CITY (ST. PAUL)
Sales Offices: INDIANAPOLIS • KANSAS CITY, MO. • PHILADELPHIA • ROCKFORD, ILL.
TOLEDO • TULSA • YOUNGSTOWN
Headquarters Offices: 208 S. La Salle St.—Chicago 4, Ill.

USS

UNITED STATES STEEL

A Better Bond for Concrete Jobs

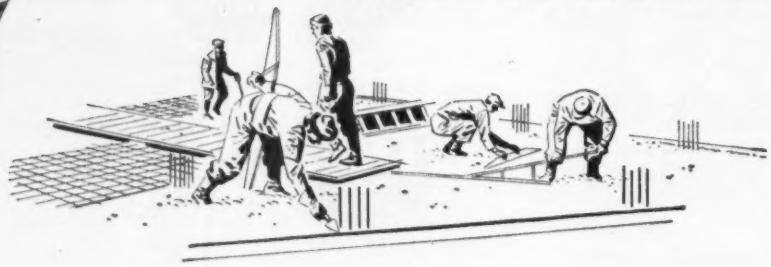
with Republic's Diamond ◇ Design Concrete Reinforcing Bars

● The reason: higher and more closely spaced lugs or deformations designed to exceed "Minimum Requirements for the Deformations of Deformed Steel Bars for Concrete Reinforcement"—ASTM Specification A-305-49, adopted June, 1949—the first standard specification to define surface deformations.

Thus you are assured of greatly improved bonding properties and reinforcement anchorage. You may be able to save steel—to cut bending and installation costs.

Republic's Diamond Design Concrete Reinforcing Bars are rolled from new billet steel only—at Cleveland, Buffalo, South Chicago and Gadsden. Check the table below for foot weights and new size designations. Write us for further data.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.



Size Number	Cross-Sectional Area, sq. in.	Nominal Diameter, in.	Foot Weight, lbs.
3	0.11	0.375	.376
4	0.20	0.500	.668
5	0.31	0.625	1.043
6	0.44	0.750	1.502
7	0.60	0.875	2.044
8	0.79	1.000	2.670
9	1.00	1.128	3.400
10	1.27	1.270	4.303
11	1.56	1.410	5.313

REPUBLIC STEEL

Republic

CONCRETE REINFORCING BARS

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

Md., Hyattsville—B.A. 9/25—At office W. R. Douglas, purch. agt. Washington Suburban Sanitary Comn., Hamilton St., Contr. 834-W, 72,000 ft. 6- to 12-in. asbestos cement water pressure pipe, Class 150; furnishing, del. 300 tons AWWA c.i. water pipe fittings; adv. ENR 9/21. CD 10/10.

S. C., Williamston—B.A. 9/26—Town, water filtration plant. Plans deposit $25. Quattlebaum Eng. Co., Johnston, engr.

LOW BIDDERS

Ga., Winder—City, Sept. 7, WW imprvs., from M. G. Aldridge, Macon, $143,262. CD 8/23.

La., New Orleans—Fourth Jefferson Drainage Dist., 648 Helois Ave., Sept. 6, 4 pump. stations addns., alterations on shores of Lake Pontchartrain, from John Riess, 806 Carondelet Bldg., $920,000.

N. C., Concord—City, Bd. Light & Water Comrs., Concord, Aug. 26, WW imprvs., from Blythe Bros. Co., Box 989, Charlotte, Zone 1, lock joint $159,970; cast iron $179,190.

CONTRACTS AWARDED

▲ **Colo., Denver**—Denver Bd. Water Comrs., City and Co. Bldg., Conduit 22, exten. from valve house at Ralston Reservoir to connection with Conduit 16 at Moffat filter plant, pipe, installation 44,892 lin. ft. 54 in. rein. cylinder type concrete pipe, together with placing valves and appurtenances, to Parrish & Linneman Constr. Co., 1300 Gray St., Lakewood, $332,515; pipe, to Lock Joint Pipe Co., Cooper Bldg., $1,174,427. Est. $1,616,000. Bids 9/5, awarded 9/8. CD 1/9/48.

O., Salem—City, City Hall, construct East Cold Run Water Project, laying second sect. transmission line, to Testa Bros. Inc., Citizens Bldg., Cleveland, $108,652***constructing reservoir, to Frank Bryan, Inc., McKees Rocks, Pa., $168,714***supply and erect standpipe, to Hammond Iron Wks., Warren, $31,700. Grand total $309,066. Bids 8/29. CD 8/31.

O., Wauseon—City, George Fletcher, mayor, Wauseon, filtration plant adn., to Doyle & Co., Huron, $106,000. Wilson W. Kohli, 405 Hedges St., Tiffin, engr. CD 7/13.

Pa., Hollidaysburg—General State Auth., 18 and Herr Sts., Harrisburg, steel storage tank, to Frank Kurian & Son, Wilmerding, $187,813. Bids 8/23. CD 8/28, under LB.

Tex., Buna—Jasper Water Imprvt. Dist., Buna, addnl. WW exten., imprvs. Purchase and Hire. $32,000. Garrett Eng. Co., 5008 Almeda Rd., Houston, engr.

W. Va., Monongah—City, water filtration plant, pump house reservoir, to Henry Haselbacher, 302 W. Virginia Ave., Clarksburg, Approx. $150,000. Bids 8/26.

Ont., Centralia—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 200,000 gal. reservoir and related piping and pumping, to Sterling Constr. Co. Ltd., 2949 Sanwich St. E., Windsor, Approx. $200,000. CD 8/31.

SEWERS, WASTE DISPOSAL

BIDS ASKED

N. J., Linden—B.A. 9/27—Linden Roselle Sewerage Auth., City Hall, Contr. II, plant outlet conduit and sludge force main, approx. 3,660 lin. ft. concrete flume, 26,000 lin. ft. timber piling 3,660 lin. ft. 24 in. rein.-con. pipe, etc.; Contr. X, electrical work for sewage treatment plant. Plans deposit $20 each. Alexander Potter Assoc., 50 Church St., New York 7, N. Y., consult. engrs. CD 2/18/49.

Tex., Dallas—B.A. 9/30—City, City Hall, Main and Harwood Sts., Cadiz Sewage Pump. Station, $550,000 storm sewers, Crawford St. from Cedar Creek to Jefferson, $55,000; Western Oak Cliff Section storm sewers in Sharon Fork from Barnett to Franklin. $187,000. J. L. Conroy, Pub. Wks. engr. CD 6/26.

Miss., Gulfport—B.A. 9/29—Harrison Co., c/o Co. engr., Court House, trunk storm sewer lines adjacent to north side of Harrison Co. Seawall. Plans deposit $25.

Tex., Houston—Bids Asked—Texas Millions, Inc., M & M Bldg., sanitary sewers, $65,000; storm sewers, $60,000, for 640 acre subdivision. Still, Wildman & Crockett, 3509 Almeda Rd., engrs. CD 8/31.

CONTRACTS AWARDED

Ill., St. Charles—City, Gustaf V. Seastrom, city clk., City Hall sewage disposal plant into secondary sewage treatment plant, to Continental Industrial Engineers, Inc., 176 W. Adams St., Chicago, Zone 3. Approx. $150,000. CD 8/17.

S.C., Kingstree — Town, sanitary sewer imprvs., to Carper & Perryclear, c/o Barber, Keels & Assoc., engrs. 1307 Marion St., Columbia, $131,721. Bids 9/6. CD 8/30.

Tex., Houston—City, City Hall, 900 Brazos St., sanitary sewer trunk line, Southcrest-South Park zone, to W. A. McClendon, 323 Engel St., $164,130. Bids 9/8. CD 9/13, under LB.

Wis., Greenfield—Town, 7325 W. Forest Nome Ave., Milwaukee, Zone 14, sanitary sewers in various streets, to Geo. Carlson Co., 4041 N. Montreal St., Milwaukee, Zone 10, $68,245. Bids 8/24. H. C. Webster & Son, 739 N. 2 St., Zone 3, engrs.

Wis., Milwaukee—Sewerage Comn. of City of Milwaukee, Jones Island, intercepting sewer in S. 60 St. from W. Arthur to W. Oklahoma Aves., to Tomaro Contractors, 5317 S. Lake Dr., Cudahy, $98,925. Bids 8/28, awarded 9/6. CD 8/15.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

September 26	October 3
Indiana	Massachusetts
Iowa	Wisconsin
Massachusetts	
September 29	October 4
Pennsylvania	California
Tennessee	Louisiana

Ont., Hastings—B.A. 9/25—F. T. Collins, secy. Dpt. Transport, Ottawa, fabrication, erection highway steel swing bridge. Approx. $100,000. Plans deposit $10.

† **Nebraska**—Bureau Reclamation, Dpt. Interior, Trenton, superstructures for bridges for relocation Chicago, Burlington & Quincy R.R., Trenton Dam, Frenchman-Cambridge Div., Missouri River Basin Proj., Spec. 3113, to American Bridge Co., First Natl. Bank Bldg., Denver, Colo. $541,305. Est. $458,900. Bids 8/16, awarded 9/5. CD 8/28, under LB.

LOW BIDDERS

Connecticut—State, G. Albert Hill, comr., State Capitol, Hartford, Aug. 28, from Brunalli Constr. Co., Main St., Southington, single span rolled beam bridge over Tokeneke Rd. with clear span of 5 ft. rein.-con. culvert Goodwives River, 290 lin. ft. grading, drainage of relocation of U. S. Rte. 1, 1,159 lin. ft. c.-conc. on Tokeneke Rd., Darien, $186,175; East Hartford-Glastonbury Expressway, 3 structures, approaches interchange Route 2 rolled beam bridges with 51 ft. clear square span 44 ft. and 54 ft. respectively, Glastonbury, $192,319; foot bridge over North Meadows Expressway and Railroad, Hartford, $63,920***from Della Bitta Bassola, Inc., Plantsville, constr. 32 ft. clear span rein.-con. rigid frame bridge over Alpine Dr., Relocation of U. S. Rte. 6, Newton, $65,340.

Florida—State Rd. Dpt., Tallahassee, Sept. 6, two 125.5 ft. bridges and two 100 ft. bridges of 25-foot I-beam spans on concrete pile bents, Rd. 2 between Baxter and Georgia State line, State Proj. Job 2702-103, Baker Co., and removing three timber bridges sand-clay base with sand seal surf. detours, 2 concrete deck girder bridges 376 ft. and 297 ft. long with roadway and sidewalk, fill and c.conc. at site of Structure 8 0.228 mi. State Rd. 10, Bridges over Escambia Bay, Fed. Aid Proj. FI-006-1 (5), Santa Rosa Co., from Scott Constr. Co., Thomasville, Ga., $67,559 and $206,752 respectively***constr. between Blue Spring and Aucilla River, 2 concrete box culverts and 210 ft. bridge consisting of six 35 ft. I-beam spans on concrete pile bents triple 10 ft. x 1 ft., concrete box culvert across Econfinax River between Sirmans and Madison Rds. 30 and S-360, Jobs 3809-10 and 105, Taylor and Madison Counties, from L. L. Hall Constr. Co., Orange Park, $54,924***three 15-ft. concrete slab span bridge on precast concrete piling constr. small drainage structures; constr. limerock base with bit. 1.048 mi. Rd. 68 sections between Fort Pierce and point approx. 7.5 mi. west, State Proj. Job 9407-107, St. Lucie Co., from S. Y. MacKenzie Co., Fort Pierce, $66,067***replacing 5 timber bridges with 25 ft. spans on concrete slabs with steel I-beams supported on bents of timber piles with c.concrete caps, Rd. 674 between Wimauma and Polk Co. line, State Proj. Job 1012-104, Hillsborough Co., from Ryan Constr. Co., 2406 Horation St., Tampa, $114,557***three 50 ft. steel I-beam spans relief bridge with concrete floor on concrete pile bents, constr. seventeen 50 ft. I-beam spans bridge with concrete floor and one 75 ft. I-beam span with open steel flooring on concrete pile bents 1,075 ft. bridge over Choctawhatchee River and relief bridge Rd. 2, State Proj. Job 5025-108, Holmes Co., from Coggin & Deermont, Chipley, $220,872***grading, constr. base, constr. detour road, constr. overpass bridge 150 ft. long consisting of concrete pile bents with steel I-beam and concrete deck 28 ft. roadway with O. H. bridge and approaches at SA and St. A. Bay Railroad at Betts, State Rd. 175 Job 4604-301, Fed. Aid Proj. FG-020-1 (4) Bay Co., from A. B. Covell, DeFuniak Springs, $90,537***cancelled bids to have been opened Sept. 6, paving Suwanee River Bridge approaches, Proj. 306-105, Columbia and Hamilton Counties. CD 8/9 and 8/25.

Louisiana—State Hy. Dpt., Baton Rouge, Sept. 6, eight 40 ft. rein.-con. deck girder span and one 80 ft. I-beam span overpass, three 40 ft. rein.-con. deck girder span bridge, four 40 ft. rein.-con. deck girder span bridge, c. conc. pavement approaches to overpass and bridges 0.243 mi. Opelousas-Port Barre Hy., State Rte. 7, Proj. 12-13-03, F. A. Proj. F 169 (8), St. Landry Parish, from Austin Bridge Co., 1000 Singleton Blvd., Dallas, Tex., $220,896. CD 8/22.

Miss., Gulfport—Harrison Co., Sept. 8, bascule span for Bayou Bernard Bridge, from W. R. Fairchild, P. O. Box 127, Hattiesburg. $220,000. CD 8/24.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, Aug. 31, hydraulic fill and structures, approaches to bridge over Neuse River between New Bern and Bridgetown, 1.422 mi. relocation of U. S. 17, Proj. 2130 F, U. 238 (9), Craven Co., from C. Walker Hodges Dredging Co., New Bern, $59,932***structures on U. S. 15 between Pittsboro and Orange Co. line, Proj. 4001. F-99 (14), Chatham Co., from Bowers Constr. Co., Inc., Box 1706, Raleigh, $271,927***structures 9.1 mi. from point on N. C. 268, approx. 8.7 mi. southwest of Wilkesboro, southwest to Caldwell Co. line, Proj. 7816 S-244 (3), Wilkes Co., from J. C. Edwards, Box 197, Orangeburg, S. C. $116,016, est. $100,000-$125,000. CD 8/23.

North Carolina—State Hy. P. Roads Comn., Raleigh, Aug. 29, bridges over Registers Creek and Deep Run between Groomtown and N. C. 62, bridge over North Buffalo Creek northeast of Greensboro approx. 2 mi. east of U. S. 29, bridge over Buffalo Creek north of McElanswille on McLeansville-Monticello Rd., bridge over Buffalo Creek approx. 7 mi. east of junction with U. S. 29 approx. 3 mi. north of Greensboro, Proj. 5-9-46-205, Guilford Co., from Columbus Contractors, Box 9, Whiteville, $108,278. est. $75,000-$100,000***bridge over Dan River between Maodan and Wentworth, Proj. 5-9-49-206, Rockingham Co., from Harvey H. Stewart, Box 1932, Charlotte, $84,320, est. $75,000-$100,000***received no bids Aug. 29, widn. bridges U. S. 64 over Crabtree Creek and Neuse River and rebuilding bridge over Buffalo Creek between Raleigh and Wendell. Proj. BS 4-6-38-174, Wake Co., $100,000-$125,000. CD 8/23.

Pennsylvania—State Hy. Dpt., Harrisburg, received no bids Sept. 8, reconstructing bridge over Darby Creek and reconstruct rein.-con. approach pavement 30 ft. wide, 277 ft. Route L. R. 130 Spur A (1 A). T. R. 420, Delaware Co. CD 8/24.

Washington—State Hy. Dpt. Olympia, received no bids Sept. 7, rein.-con. girder bridge over South Neman River on 0.007 mi. Primary State Hy. 12, Pacific C. CD 8/23.

CONTRACTS AWARDED

Florida—State Rd. Dpt., Lang Field, St. Petersburg, Structure A, twenty-eight 36 ft., concrete deck girder span on concrete pile bents, one electrically operated bascule span approx. 0.2 mi. south of Maximo Pt.; Structure B, forty 36 ft. concrete deck girder spans on concrete pile bents, one 82 ft. steel I-beam span on concrete pile bents, approx. 2.99 mi. of Maximo Point, Rd. 55, south of Maximo Point, S. P. Job No. 1517-177, Pinellas Co., to Hendry Corp., Rattlesnake, $838,940. Bids 7/5, awarded 9/5. CD 7/25, under LB.

Maryland—State Rds. Comn., Baltimore, Zone 2, double leaf steel girder bascule span, 50 ft. channel, two flanking spans 59 ft. steel I-beam each, two 27 ft. roadways separated by 4 ft. median, bascule piers above bases for bridge over Kent Island Narrows on Stevensville-Queenstown Hy. Constr. Q 168-11-215, Queen Anne's Co., to McLean Contg. Co., 1301 Fidelity Bldg., Baltimore, $537,129. Bids 8/29, awarded 9/1. CD 9/5, under LB.

▲ **New Jersey and Pennsylvania**—Delaware River Joint Bridge Comn., Broad St. Bank Bldg., Trenton, N. J., highway bridge and approaches, from Trenton, Mercer Co., N. J., to Morrisville, Bucks Co., Pa., to Dravo Corp., Neville Island, Pittsburgh, Pa., $2,136,298. Bids 8/31, awarded 9/7. CD 9/6, under LB.

N. J., Pemberton—Bd. Freeholders, Burlington Co., reconstr., widn., Hanover St. Bridge over Rancocas Creek, to Joseph W. Rogers, Main St., Succasunna, $92,581. Bids 9/8, awarded 9/9. CD 9/1.

Washington—State Hy. Dpt., Olympia, rein.-con. girder bridge over Okanogan on 0.072 mi. Primary State Hy. 10, Oroville south, F.A.P. F-029-2-(1), Okanogan Co., to E. McKellar, Chelan. $145,764. Bids 9/7. CD 8/23.

Wisconsin—State Hy. Comn., Madison, Canal Bridge and approaches and Ketchum Point Overhead and approaches, Portage, Contr. 1, structures, B-11-3, B-11-2 and approaches, Proj. F 035-1 (90) and FAGM 035-1 (10) S. T. Hy. 33, Columbia Co., to Brennan Bros., Lansing, Ia., $216,984. Bids 8/8. CD 8/15, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

September 26	Pennsylvania
Indiana	Tennessee
Iowa	October 3
Kansas	California
Maryland	Wisconsin
September 28	
Kansas	October 4
September 29	California
Minnesota	Louisiana

O., Toledo—B.A. 9/26—City, City Hall, imprv. Edgwood Dr., Nathalie Pl., Packard Rd. and Peak Ave. $58,000. Plans deposit $10. M. J. Curtis, city street div. engr. CD 10/17/49.

† **New Mexico**—B.A. 10/5—Bureau Pub. Roads, Dpt. Commerce, U. S. Court House, Santa Fe.

Otero Co.—7.608 mi. Alamogordo-Cloudcroft, Forest Hy. Proj. 35-A3.

Calif., Los Angeles—B.A. 10/10—Bd. Superv., Los Angeles Co., 501 Hall of Records, imprv. 120 St. Crenshaw Blvd. to Prairie, Hawthorne, $50,000. Plans deposit $5. Extended date. C. E. Arnold, co. engr. CD 9/7.

New Jersey—B.A. 10/11—New Jersey Turnpike Auth., Prospect St., Trenton,

Mercer and Middlesex Counties—construct pavement for turnpike highway and pavement for 34 cross roads and work appurtenant thereto on Sec. 4 of New Jersey Turnpike, Contr. No. 62. CD 7/13/49.

Tex., Houston—Bids Asked—Texas Millions, Inc., M & M Bldg., street constr. and paving 18 to 40 ft. wide, asph. type for 640 acre subdivision. $90,000. Still, Wildman & Crockett, 3509 Almeda Rd., engrs. CD 8/31.

LOW BIDDERS

† **Arkansas**—Bureau Public Roads, Dpt. Commerce, P. O. Box 338, Albert Pike Station, 115 Nevada St., Hot Springs, Aug. 31, construct 8.253 mi. Arkansas Forest Hy. Proj. B-7-A2, Part 1, Pope and Newton Counties, from Porter-DeWitt Constr. Co., P. O. Box 279, Poplar Bluff, Mo., $335,348. CD 8/11.

California—State Div. Hys., Sacramento, Sept. 6, grading, surf. an off-ramp with plant mix surf. on crusher run base, widn. existing pavement 2.3 mi. on both sides with plant mix surf. on cement treated crusher run base, at Salsipuedes St. and between Bath and Junipero Sts., Santa Barbara Co., from N. M. Ball Sons, 685 Delaware St., Berkeley, $110,936. CD 8/14.

Calif., Los Angeles—City, Bd. P. Wks., 153 City Hall, street imprvs. and sanitary sewers in Victory Blvd. and Kraft Ave. Imprvt. Dist. from Robert Vlacich, 2901 Worthen Ave., $161,967. CD 8/23.

Colorado—State Hy. Dpt., Denver, Sept. 8, grading, structures, oil processed surf. 8.709 mi. State Hy. 149 between Creede and South Fork, Proj. SP (23-62) 149-502, Rio Grande and Mineral Counties, from Brown Constr. Co., 1530 E. Abriendo St., Pueblo, $161,929 est. $159,067; grading structures and oil processed surf. 6.843 mi. State Hy. 2 between Steamboat Springs and Rabbit Ears Pass, Proj. F 005-2 (6), Routt Co., from Lowdermilk Brothers, 140 S. Elati St., Denver, $516,824 est. $436,149. CD 8/31.

▲ **Florida**—State Rd. Dpt., Tallahassee, Sept. 6, from Duval Eng. & Contg. Co., 1746 E. Adams St., Jacksonville, ocala rock base of two lanes, b. conc. hot binder course, sidewalk, curb, gutter, drainage structures 0.648 mi. State Rd. A1A, between point near Barbra St. and intersection with Hogan Rd. in Jacksonville, Fed. Aid Urban Proj. U030-2 (1), Job 7210-201, Duval Co., $199,771; alternate ocala limerock base and shell base with bit. 4.55 mi. Rd. 105 Hecksher Dr. from Road 5 to point approx. 5.281 mi. East, Job 7225-08, Duval Co., $86,411; removing existing pavement, ocala limerock base with b. conc. 1.048 mi. Rd. 200 8 St. in Fernandina between Lime St. and Center St., State Proj. Job 7406-110, Nassau Co., $174,132***from Polk Constr. Co., Lakeland, paving F 021-1 (1), Putnam Co., $213,846; sand asph. hot mix pavement 3.53 mi. Rd. 46 between Wekiva River and point approx. 3.53 mi. east Job 7703-104, Seminole Co., $67,794; sand asph. surf. course, widn. strips, drainage structures 19.212 mi. State Rd. 630 between Fort Meade and Frostproof Fed. Aid Secondary Proj. S-299 (1), Job 1651-250, Polk Co., $235,899.

from Brinson Constr. Co., 51 St. and E. Broadway Ave., Tampa, imprv. S. 321 (1), Palm Beach Co., $52,303; S. R. R. M. pavement, small drainage structures 2.826 mi. Rd. S 951, between State Rd. 92 and Big Marco Pass in Collier City, Fed. Aid Secondary Proj. S-276 (1), Job 0351-250, Collier Co., $95,026***from L. L. Hall Constr. Co., Orange Park, bit. road mix 3.902 mi. Rd. S-214, between Rd. 15 and point approx. 3.902 mi. west, State Proj. Job 7151-150, Clay Co., $57,277; sand asph, hot mix pavement 5.545 mi. Rd. S-611, between St. Lucie Co. line and Rd. 60 at N. Vero Beach, Job No. 8852-105, Indian River Co., $118,373***from A. F. Rich Co., Monroe and Pershing Sts., Tallahassee, sand asph., widn. strips, b. conc. small drainage structures 6.815 mi. Rd. 30 between point approx. 2.6 mi. East of East Bay Bridge in (Tyndall Park Reservation) and Sherman Ave. in Panama City, Fed. Aid Proj. No. F-017-2 (4), Jobs Nos. 4602-204, 4603-201 and State Job 4602-144, Bay Co., $222,427; bit. 2.82 mi. Rd. 485 between Rd. 45 west of Brookville to point approx. 2.82 north, State Proj. Job 0808-103, Hernando Co., $108,099***from Cleary Bros. Constr. Co., West Palm Beach, imprv. Proj. 9375-101, $413,291; shell base, bit. grading shoulders slopes, constr. one 75 ft. concrete deck bridge on 12 in. precast piling 2.414 mi. State Rd. S-702 between State Rd. 809 and point approx. 2.4 mi. east, Fed. Aid Secondary Proj. S-319 (1), Job 9351-250, Palm Beach Co., $49,850.

from Cone Bros. Constr. Co., Caesar and Cumberland Aves., Tampa, grading, stabilizing roadbed, constr. ocala rock base, sand-asphalt hot mix surf. course 7.958 mi. State Rd. 587 between west city limits of Tampa and Citrus Park Fed. Aid Secondary Proj. S-289 (1), Job 1052-250, Hillsborough Co., $237,272; b. conc. 3.103 mi. Rd. 60 in Tampa between Howard Ave. and 13 St. State Proj. Job 1008-1081 Hillsborough Co., $61,371***from Doyle Pope, Quincy, imprv. Proj. S-385 (1), $117,157 and Proj. S-286 (1), $86,230,***from J. D. Manly Constr. Co., Leesburg, imprv. Charlotte Co., $215,205***from John Monaghan Inc., Pelham, Ga., bit. drainage structures 6.12 mi. State Rd. S-59 between Micosukee and Georgia Line Fed. Aid Secondary Proj. S-316 (1), Job 5551-250, Leon Co., $93-138***from Fairchild-Carter Constr. Co., Perry, imprv. Proj. 0208-02, Citrus Co., $72,209***from Hubbard Constr. Co., Orlando, imprv. Proj. 7504-106, Orange Co., $92,971***from John A. Banton Constr. Co., 301 20 St. S., St. Petersburg SBRM 9.757 mi. State Rd. S-675 between State Rd. 43 south of Parrish and point approx 1.5 mi. northwest of State Rd. 64, Fed. Aid Secondary Proj. No. S-31 (2), Job 1351-201, Manatee Co., $142,021***from Belcher Oil Co., 1217 Biso. Blvd., Miami, imprv. S-296 (1), Monroe Co., $74,723***from Faulk & Coleman Constr. Co., 4 Points, Woodville Hy., Tallahassee, imprv. FI-002-3 (4) Hamilton Co., $110,346***cancelled bids to have been opened Sept. 6, S-287 (1), Hamilton Co.; S-280 (1), Duval Co.; 3851-150, Taylor Co. CD 8/9, CD 8/25 and CD 8/29.

Ill., Chicago—City, City Hall, Zone 2, paving, Kedzie Ave. from Elston to Montrose Sts., from W. J. Sheppard Co., 1412 Altgeld St., Chicago, Zone 14, $289,566. CD 7/11/49.

Louisiana—State Hy. Dpt., Baton Rouge, Sept. 6, grav. base course, or alternate, soil cement base course, bit. surf. tr. asph. rein.-con. deck girder bridge, 4.998 mi. Wilson Mississippi State Line Hy., State Rte. 91, Proj. 250-04-06, F. A. Secondary Proj. S-69 (5), East Feliciana Parish, from Barber Bros. Co., 2636 Dougherty Rd., Baton Rouge, $175,781*** grav. base course, or alternate soil cement base course, bit. surf. tr. asph. 4.871 mi. Bayou Chicot-St. Landry Hy., State Rte. 23, Proj. 204-03-03 Evangeline Parish, from Pankey Wheat, Oakdale, $94,566***grading, small drainage structures, patching, widn. existing conc. pavement bit. surf. course 12.826 mi. Decompte-Alexandria Hy., State Rte. 1, Proj. 8-09-13, F. A. Proj. F-162 (7), Rapides Parish, from T. L. James & Co., Inc., Ruston, $417,503*** soil cement base course or alternate grav. base course, three applications surf. tr. asph. 5.145 mi. Union Hill Glenmore Hy. State Rte. 113, Proj. 140-03-05, Rapides Parish, from T. W. Kleinpeter & Co., 146 S. Lee St., Baton Rouge, $99,320. CD 8/16.

▲ **Maryland** — State Rds. Comn., Baltimore, Zone 2, Sept. 5, crusher run sub-base, penetration macad. base, conc. base surf. grading, drainage, surf. course 5.053 mi. Divided Hy. along U. S. Rte. 240 (Washington National Pike), Contr. F 425-1-615, Frederick Co., from W. E. Graham & Sons, Cleveland, N. C., $1,237,274; b. conc. wedge, leveling, base, grading, drainage, widn., resurf. course 4.951 mi. State Rte. 313 from Sudlersville to Unicorn Mills, Contr. Q 235-215, Queen Anne's Co., from Bituminous Constr. Co., 3301 Ridgewood Ave., Baltimore, $262,505. CD 8/22.

▲ **North Carolina**—State Hy. & Pub. Wks. Comn., Raleigh, Aug. 29, from Zeigler-Cline Constr. Co., Box 386, Fayetteville, STBC, sand asph. or b. conc. surf. course 8.41 mi. from point on N. C. 130 at Old Dock east and southeast crossing Juniper Creek at Brunswick Co. line to beginning of pavement, Proj. 3-153, S-328 (1), Columbus and Brunswick Counties, $111,159, est. $100,000-$125,000; sand asph. or b. conc. surf. course

Specification concrete being poured by Murphy & Perkins Company, Oklahoma City, Oklahoma

Contractors everywhere, on all type jobs, from Bureau of Reclamation to light residential construction, have only the highest praise for Challenge Truck Mixers . . . praise that is making Challenge Mixers more popular everyday! Contractors are especially enthusiastic about their greater legal payload capacity (5-6 cu. yds.); higher discharge (without using the chute, the Challenge will discharge directly into a 6½ foot high form); fast, easy operation (discharges 4" slump concrete in 15 seconds per yard); and the ease with which they are maneuvered between and around building forms.

Challenge Mixers have a guaranteed rated payload capacity and will thoroughly mix concrete, regardless of slump, in accordance with the most rigid specifications.

Insist on Challenge-mixed concrete when you buy.

Cook Bros. Equipment Co.
1815 N. Broadway, Los Angeles 31, Cal.

Please send complete information on the advantages of Challenge Truck Mixers, together with prices and the name of the nearest dealer in my area.

NAME _____

ADDRESS _____

CITY _____ STATE _____

COOK BROS.
EQUIPMENT CO.
EXCLUSIVE NATIONAL
DISTRIBUTORS FOR
CHALLENGE
the modern, streamlined truck mixers

1815 N. Broadway, Los Angeles 31, Cal. Phone CApitol 2-9111

5.43 mi. from point on N. C. 24 at east edge of Boulaville south to Lyman, Proj. 3-302, S-379 (1), Duplin Co. **$50,735**, est. $50,000-$75,000; sand asph. or b. conc. surf. course 17.2 mi. from N. C. 403 via McCullens Crossroads and Keener to Bob Smith Rd. and Bob Smith Rd. south to U. S. 421, from Taylors Bridge to Way Cross Rd. Proj. 3-34-221, Sampson Co., **$71,000**, est. $50,000-$75,000***from Barrus Constr. Co., Box 561, Kinston, b. conc. binder and surf. course 17.4 mi. U. S. 58, from intersection with N. C. 91, 0.5 mi. north of Snow Hill, then north through Farmville and Fountain to Edgecombe Co. line, Proj. 2291, Greene and Pitt Counties, **$225,248**, est. $200,000-$225,000

from Spotts & Co., Box 124, Newberry, S. C., STBC, bit. surf. tr. or sand asph. or b. conc. surf. course 13.27 mi. from point on N. C. 55, approx. 5.7 mi. west of Newton Grove northeast through Parkers Mill and Blackman to point approx. 9 ft. south of 20 ft. paved road 2 mi. east of Four Oaks, Proj. 4-154, S-393 (1), Sampson and Johnston Counties, **$130,474**, est. $125,000-$150,000***from B. G. Young & Sons, Johnson City, grading 7.93 mi. U. S. 70, 29 and 52, from northeast end of Yadkin River Bridge to point 2,300 ft. from west city limits of Lexington, Proj. 5255, Davidson Co. **$149,352**, est. $175,000-$200,-000***from E. H. Hines Constr. Co., Greenwood, S. C., traffic bound macad. and bit. surf. tr. 5.61 mi. from point on U. S. 74 at east end of bridge over First Broad River, 1.7 mi. west of Shelby, southeast through south Shelby to a point on U. S. 74 toward Kings Mountain, Proj. 8235, F-150 (7). U-150 (6), Cleveland Co., **$147,813**, est. $150,000-$175,000.

from M. F. Eure, Box 209, Beaufort, subgrade reinf. sand asph. or b. conc. surf. course 8.49 mi. from point on center line of county road leading from Sunbury to Drum Hill and going in a westerly direction along said county road to its intersection with N. C. 37, Proj. 1-9-7-203, Gates Co. **$113,717***from Sam Finley, Inc., Box 2389, Roanoke, Va., sand asph. or b. conc. surf. course 10.8 mi. from Arapahoe to junction with N. C. 55, 4.2 mi. east of Craven Co. line via Scotts Store, Proj. 2-93-202, Pamlico Co., **$52,044**, est. $50,000-$75,000***from Wayne Engr. & Constr. Co., Inc., Box 254, Mt. Olive, STBC, bit. surf. tr. or sand asph. or b. conc. surf. course 15.76 mi. surfacing 3 sections of county roads and streets, Pikeville and Fremont, Proj. 4-9-39-213, Code 5900-414, Code 5900-430, Wayne Co., **$127,020**, est. $125,000-$150,000***from D. W. Winkelman Carolina Co., Box 2566, Greensboro, traffic bound macad. or PCSBC, bit. surf. tr. or b. conc. surf. course 4.13 mi. from Mayodan north along Mayodan Mountain Rd. to N. C. 770, Proj. 5-9-49-207, Rockingham Co., **$85,003**, est. $75,000-$100,000.

from Brown Paving Co., Box 484, Lexington, b. conc. surf. course 10 mi. N. C. 18, from Shelby to Fallston, in Shelby toward Fallston, Proj. BS 9-6-80-139, Code 5900-946, Cleveland Co., **$68,930***from Ballenger Paving Co., Box 1046, Greenville, S. C., b. conc. surf. course 10 mi. N. C. 18 from Shelby to Fallston, in Shelby toward Fallston, Proj. BS 9-6-80-139, Code 590-946, Cleveland Co., **$68,930**, est. $50,000-$75,-000***from A. R. Thomoson Contractor, Inc., Rutherfordton, STBC, bit. surf. tr. or b. conc. surf. course 4.85 mi. from intersection of county road and Bostic-Sunshine Paved road, northeast to point at beginning of pavement of Ellenboro-Heilic Paved Road, Proj. 9-986-208, Rutherford Co., **$73,516**, est. $75,-00-$100,000***from Brown Paving Co., Box 484, Lexington, b. conc. surf. course 16.6 mi. U. S. 264 and N. C. 42, from Toisnot Swamp Bridge to Greene Co. line, from point 1.3 mi. east of intersection of U. S. 301 and N. C. 42 to Edgecombe Co. line, Proj. BS 4-6-40-124, Wilson Co., **$94,558***from Adams & Tate Constr. Co., Box 60, Roanoke, Va., b. conc. surf. course 16.6 mi. U. S. 264 and N. C. 42 from Toisnot Swamp Bridge to Greene Co. line, from point 1.3 mi. east of intersection of U. S. 301 and N. C. 42 to Edgecombe Co. line, Proj. BS 4-6-40-124, Wilson Co., **$94,558**, est. $100,000-$125,000. CD 8/23.

▲ **Pennsylvania**—Stat Hy. Dpt., Harrisburg, Sept. 9, wid'n. pavement with c. conc., 22 ft. wide incl. construction of one plate girder railroad overpass bridge, incl. curb and drainage const. 376 ft. Baldwin Twp. Route L. R. 330 (10 B). T. R. 51, Allegheny Co., from Paul L. Medis, 200 Saw Mill Run Blvd., Pittsburgh, Zone 26, **$191,470***wid'n pavement with c. conc. base 12 ft. wide, and bit. surf. pavement and new base 28 ft. wide; wid'n. pavement with crushed aggregate base and bit. surf. 6 ft. wide; construct plain c. conc. base with bit. surf. 28 ft. wide and bit. surf. 42 and 31 ft. wide for paving railroad crossing and existing bridge floor, 5,360 ft. Route L. R. 62 (12) T. R. U. S. 219, Cambria Co., from L. R. Owen Co., R. D. 2, Johnstown, **$106,371.**

c. conc. pavement 24 ft. 36 ft., and 48 ft. variable in width, incl. one rein.-con. structure; construct rein.-con. pavement 24 ft. wide with temporary wid'n. on right side of crushed stone base course and bit. surf. variable 24 ft. to 17 ft. wide and the build-up and wid'n. of existing pavement with crushed stone base course and bit. surf. variable 41 ft. to 22 ft. wide, 13,561 ft. Route L. R. 147 (5-B). T. R. 100, Chester Co., from Good Constr. Co. Inc., 726 Columbia Ave., Lancaster, **$654,474***crushed aggregate base with bit. surf. 14 ft. wide, incl. three rein.-con. structures, incl. two concrete deck girder bridges and shoulder grading 16,685 ft. Route L. R. 32004 (R-1, R-2). L. R. 32003 (R-2), Indiana Co., from A. E. O'Block, Unity, **$1,208,532***surf., plain c. conc. base and existing pavement with bit. surf. variable in width 26 to 55 ft., 2,149 ft. Route L. R. 153 (15 B). 646 (3 A). 178 (8A) T. R. 202, 309 and 463, Montgomery Co., from Polselli & Angelucci, 621 N. 54 St., Phila., **$102,579***c. conc. pavement 30 ft. wide and plain c. conc. base with relaid brick pavement 22 ft. and variable in width 1,393 ft. Route Appl.

It's Cheaper by delivering through the air with a

SAUERMAN TAUTLINE CABLEWAY

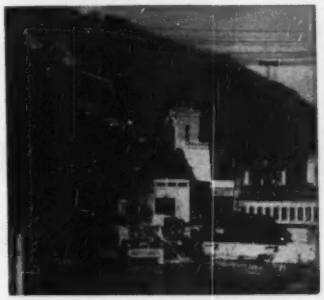


Illustration shows Sauerman Tautline Cableways working on Chastang Dam. Two identical machines with spans of 1146 ft. and conveying speeds of 1300 f.p.m., handle all the materials going into this dam. Mixed concrete is handled in 8 cu. yd. dump buckets; other materials in skips and slings.

Operating above the working area—never interfering with other operations, a Sauerman Tautline Cableway efficiently hoists, conveys, and places any material at any spot within its span, reaching out as far as 3,000 ft. if necessary. The machine may have stationary towers, mobile head and tail towers moving in unison, or one mobile tower operating radially around a stationary tower or anchorage.

Not all Sauerman Tautlines are as big as the two pictured at left. In contrast with these huge machines, which easily lift and carry 25-ton loads, are the general utility type machines with operating spans up to 500 ft. and lifting capacities up to 5 tons. One of these simple, semi-portable machines often handles all the materials in the construction of an ordinary bridge or similar structure, taking the place of derricks, cranes, concrete buggies, etc.

WRITE FOR TAUTLINE CATALOG 19-G

Rope Haulage Equipment Specialists Since 1909

SAUERMAN BROS., Inc.

532 S. CLINTON ST. CHICAGO 7, ILLINOIS

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and All Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.

Scranton, Pa. Dept. E, U. S. A.

CONTRACTORS' FIELD OFFICE TRAILER

Designed by Road Contractor

8' Aluminum Body—8' Wide
2 Rooms—2 Built-in Desks
1 Drafting Table—Built-in
Letter Files—Cabinets—
Closets—Drawers—etc.

Price $2600.00 f.o.b. Baltimore

TRAILER VILLAGE, INC.

8645 Pulaski Highway, Baltimore 21, Md.

Phone: Essex 2233

HEAVY TIMBER CONSTRUCTION Details

Engineers and architects will find handy these 13 carefully drawn plates of floor and roof framing details prepared by the National Lumber Manufacturers Association. Warehouses, factories and other heavy structures using this type of timber construction, equipped completely with approved sprinkler protection, have shown a remarkable record of fire safety.

Just tack this ad to your letterhead for FREE copy of this popular design guide.

TIMBER ENGINEERING CO.

WASHINGTON 6, D. C.

143 (3). T. R. 906 (3), Westmoreland Co., from Wemak Co., Scottdale, $80,161. CD 8/24.

† **Tennessee**—Bureau Pub. Roads, Dpt. Commerce, First Natl. Bank Bldg., Florence, Ala., Sept. 1, road work, Natchez Trace Parkway, Wayne, Lawrence and Lewis Counties, from Carlton Contg. Co., Albany, Ga., $565,425. CD 8/11.

▲ **Tennessee**—State Hy. Dpt., Nashville, rejected bids Aug. 25, wid'n., bit. materials resurf. 27.52 mi. sect. of State Hy. 34 from Hawkins Co. line and exten. to Washington Co. line, Greene Co., L. B. $646,117*** Wid'n., bit. materials resurf. 26.72 mi. sect. State Hy. 33 from junction State Hy. 68 at Madisonville and exten. to Magnolia Ave. in Maryville, Monroe, Loudon and Blount Counties, L. B. $642,284*** wid'n., bit. materials resurf. 12.15 mi. sect. State Hy. 33 from the Georgia state line and extending to point 2 mi. south of Ocoee River Bridge, Polk Co. L. B. $304,686. CD 8/29, under LB.

CONTRACTS AWARDED

Colorado—State Hy. Dpt., Denver, grading, structures, oil processing 8.419 mi. State Hy. 392 between Lucerne and Barnesville, Proj. S-Sg 0034 (1), Weld Co., to L. J. Hesser, Greeley, $164,661 est. $181,701. Bids 8/1, awarded 9/5.

Ind., Fort Wayne—City, paving section of East Berrt St. from Clay to Francis Sts., to Homer Grice Constr. Co., U Huntington Rd. $60,875, est. $61,927.

▲ **Maryland**—State Rds. Comn., Baltimore, crusher run sub-base, penetration macd. base, bit. con. base, surf. course 5.053 mi. divided hy., connection ramps, relocated roads along Washington National Pike, State Rte. 240, Contr. # 425-1-615, Frederick Co., to Wm. E. Graham & Son, Cleveland, N. C., $1,237,274. Awarded 9/9. CD 9/12.

New Jersey—State Hy. Dpt., Trenton, wid'n. John Fitch Way from the Assumpink Creek bridge to Ferry St. to 50 ft. and installing center lane separation, Mercer Co. to A. J. Cunningham & Sons, 370 Newkirk Ave., Trenton, $222,162. Bids 9/12.

N. D., Fargo—City, paving streets and alleys and catch basins, etc., to Northern Improvt. Co., 633 1 Ave., $110,443. Bids 8/29.

▲ **Ohio**—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15, grading, draining, paving Type T-71, concrete and concrete slab top culvert, Bridge CO-7-63, Columbiana Co., to A. J. Baltes, Inc., 11 Olive St., Norwalk, $1,518,226, est. $1,562,000***bit. tr., Proposals 1 and 2, S. R. 90, Ashtabula Co., to Hull Paving Co., 329 Pillow St., Butler, Pa., $73,934, est. $74,946***bit. tr. Proposals 1 to 3 (inclusive) U. S. R. 33 and 50, Athens and Vinton Counties, to Fenton Constr. Co., P. O. Box 310, Ashland, $56,877, est. $59,970***grading, draining, paving, Type T-71, S. R. 125, Clermont Co., to D. R. Smalley & Sons, Inc., 426 W. Market St., Celina, $410,497, est. $431,597 ***grading, draining, wid'n. and resurf. Type T-35, U. S. R. 40, Montgomery Co., to Hinton Constr. Co., 638 N. Main St., Celina, $223,410, est. $247,800*** grading, draining, paving, Type T-35, concrete, steel Bridge MO-49-10, S. R. 49, Montgomery Co., to Bates & Rogers Constr. Corp., 600 W. Jackson Blvd., Chicago, Ill., $1,496,929, est. $1,446,000***grading, draining, paving, wid'n., Type T-35 on B-70, concrete, steel Bridge PU-224-204, U. S. R. 224, Putnam Co., to Frantz Bros., Box 27, Sidney, $263,405, est. $280,660***resurf. Type T-35, C. R. 215, Richland Co., to Mansfield Asphalt Paving Co., Rear 153 Orange St., Mansfield, $77,760, est. $75,190***bit. tr. one proposal, U. S. R. 52, Scioto Co., to Ohio Asphalt Paving Corp., 823 Prospect St., Portsmouth, $57,365, est. $57,407. Grand total $4,158,403. Bids 8/22.

Tex., Snyder—City, complete project of street imprvs. and hard-type paving, to Brown & Root, Inc., Box 3, Houston. $633,000. Bids 8/31. CD 9/11, under LB.

Utah—State Road Comn., State Capitol, Salt Lake City, 2 in. road mixed bit. 13.634 mi. State Hy. between Spring City—Wales and Moroni—West, FASP Nos. S-196 (2) and S-304 (1), Sanpete Co. to W. W. Clyde Constr. Co., Springville, $199,656. Est. $235,701. Bids 9/5. CD 8/24.

Wyo., Cody—City, City Hall, grading, curb and gutters, grav. base course, bit. surf. application, storm sewers, to Taggart Constr. Co., Cody, $488,635. Bids 8/25, awarded 8/30. CD 5/5.

EARTHWORK, WATERWAYS

BIDS ASKED

† **Missouri and Mississippi**—B.A. 9/27—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., spur levee, riprap paving, 24,000 cu. yd. Item R 861 Concord located on right bank Mississippi River in Pemiscot Co., Mo., point levee about 2 mi. north of Concord, Mo.; 20,000 cu. yd. Item L-626 R, Sharard located on left bank of Mississippi River, in Coahoma Co., Miss., CIVENG 40-041-51-25.

† **Ohio**—B. A. 9/28—U. S. Eng., Madison Ave. and 8 St. West, Huntington 18, W. Va., signal line for water level recorder for Burr Oak Dam, Burr Oak Reservoir Proj., East Branch of Sunday Creek, Serial No. CIVENG 46-022-51-18. CD 8/24.

Miss., Gulfport—B.A. 9/29—Harrison Co., Court House, 1,214,574 cu. yd. hydraulic fill for constr. sand beach at Henderson Point. Plans deposit $25. CD 6/27/46.

† **Washington**—B.A. 10/5—U. S. Eng., 19 E. Poplar St., Walla Walla, revetted levees along Touchet River, Dayton.

† **Idaho**—B.A. 10/10—Bureau Reclamation, Dpt. Interior, Burely, laterals from Wells 64824, 18A824, 8A824, 21A824, 8A823, 6A923, 27A823, 27A823, and 33A922, 8 to 10 mi. northwest and northeast of Rupert, Spec. R1-101.

LOW BIDDERS

† **Mississippi**—U. S. Eng., P. O. Box 60, Vicksburg, Sept. 7, 700,000 cu. yd. earthwork on east bank Mississippi River, Washington Co., from Pioneer Contg. Co., 453 Plum Ave., Memphis, Tenn., $135,000. CD 8/25.

Miss., Gulfport—City, rejected bids Aug. 17, 1,020,000 cu. yd. dredging, wharf, warehouse addn. L.B. $909,261. CD 8/25, under LB.

B. C., Sonitula—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Sept. 6, breakwater and floats, from Horie Latimer Constr. Co. Ltd., 1250 West Hastings St., Vancouver, Approx. $599,485. CD 8/15.

CONTRACTS AWARDED

▲ † **Nebraska**—Bureau Reclamation, Dpt. Interior, Trenton, earthwork and structures, except bridge superstructures, for relocation Chicago, Burlington & Quincy R. R., Trenton Dam, Missouri River Basin Proj., Spec. 3112, to Perry McGlone Constr. Co., 1805 Grand St., Kansas City, Mo., $2,195,468. Est. $2,229,313. Bids 9/1, awarded 9/5. CD 9/12, under LB.

AIRPORTS

BIDS ASKED

† **Fla., Cocoa**—TECHNICAL BUILDINGS, etc.—B.A. 10/3—U. S. Eng., P. O. Box 4970, Jacksonville, 4 technical and 3 utility bldgs. in launching area, Long Range Proving Ground Div. U. S. A. F., Inv. No. Eng. 08-123-51-3. CD 8/1.

LOW BIDDERS

†**Md., Patuxent River**—AIRPORT IMPRVS.—P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., cancelled bids to have been opened Sept. 6, rein.-con. arch type magazine, extend bit. surf. access road at Naval Air Station, Patuxent River, Spec. 251,49. CD 8/23, under Streets and Roads.

CONTRACTS AWARDED

▲ **Pa. Phila.**—AIRPORT—Dpt. P. Wks., City Hall Annex, drainage, pipes, grading and paving Phila. International Airport, to Progressive Builders, Inc., Pennsauken, N. J., $2,170,504. Bids 9/1. CD 9/6, under LB.

LATIN AMERICA

BIDS ASKED

† **Bermuda**—U. S. Eng., 80 Lafayette St., New York 13, N. Y., U. S. A., receives bids Nov. 2, family housing at Kindley Air Force Base, 70 one family masonry dwelling, Eng 30-075-51-110. $1,000,000-$2,000,000. Plans deposit $7.50.

PUBLIC BUILDINGS

BIDS ASKED

▲ **R. I., Providence**—LIBRARY—B.A. 9/25—City, C. E. Sherman, librarian, 229 Washington St., limestone, glass brick granite central library, Washington St. $1,300,000. Plans deposit $150. Howe, Prout & Ekman, 17 Custom House St., archts. CD 12/9/46.

Ga., Rome—HOUSING—B.A. 9/26—Rome Housing Auth., c/o Poundstone, Ayers & Godwin, archts., Bona Allen Bldg., Atlanta, Housing Projs. GA-5-3 and GA-5-4, incl. 200 units and administration bldgs. Plans de-$50. CD 8/23.

Md., Baltimore—SCHOOL—B.A. 9/26—Baltimore Co. Bd. Educ., Towson, part bsmnt., 185x300 ft., brick, cinder block, steel Maidens Choice School, Wilkens Ave. and Maidens Choice Lane, $500,000. Plans deposit $50. Henry Powell Hopkins, 10 E. Mulberry St., archt. Van Rensselaer Saxe, 100 W. Monument St., struct. engr. Jas. Posey, 10 E. Pleasant St., mech. engr CD 8/14

† **New Jersey**—BUILDINGS—B. A. 9/26—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., addnl. bldgs., utilities

▲ **N. Y., Elmira**—HOUSING—B.A. 9/26—Elmira Housing Auth., 346 Woodlawn Ave., 85 family apartment, $1,000,000. Plans deposit $25. Extended date. Haskell, Considine & Haskell, 1 Hulett Bldg., archts. CD 8/31.

N. Y., Flushing—HOUSING—B.A. 9/26—New York City Housing Auth., 63 Park Row, New York, Zone 7, general contract, heating and ventilating, elctrical work, plumbing for Pomonok Houses (Proj. No. NYC-221) in area bounded by 71 Ave., Kissena Blvd., 65 Ave., and Parsons Blvd., Queens Boro. Plans deposit $75. Extended date. CD 8/4.

N. C., Albemarle—SCHOOL—B.A. 9/26—Albemarle City Schools, Claud Grigg, secy., Albemarle, West Albemarle School addn. Central School alterations, addns. Plans deposit $50. Wm. H. Deitrick, Inc., 115 W. Morgan St., Raleigh, archt.

N. C., Elizabethtown—HOSPITAL—B. A. 9/26—Bladen Co. Hospital, Courthouse, 50-bed hospital, Proj. N.C. 57, Plans deposit $50 general contract, $25 mechanical work. F. Carter Williams, 133 Fayetteville St., Raleigh, archt. CD 8/17.

O., Toledo—MEDICAL-SURGICAL—B.A. 9/26—Dpt. P. Wks., S. O. Linzell, dir. Ohio Dept. Bldg., Columbus, medical-surgical bldg. at Toledo State Hospital. $156,000. Britsch & Munger, Nicholas Bldg., archts. H. G. Allen, c/o owner, state cons. archt. CD 12/13/44.

▲ † **D. C., Wash.**—BUILDING—B.A. 9/27—General Services Admin., 18 and F Sts. N. W., Wash. 25, D. C., 4 story, part bsmnt., concrete, limestone facing with face brick in courts, composition roof with part tile promenade, Red Cross District of Columbia Chapter House, 20 and E Sts. N. W. $1,000,000-$3,000,000. Eggers & Higgins, 542 Fifth Ave., New York, N. Y., archts. CD 4/28/47.

Mass., Boston—SCHOOL—B.A. 9/27—City, Dpt. Schools, 26 Norman St., high school addn., alterations, Brighton. Plans deposit $100, Holmes & Edwards, Inc., 126 State St., archts. CD 5/19.

Pa., California—DORMITORY—B.A. 9/27—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing, electrical work men's dormitory at California State Teachers College. $263,200. Plans deposit $10. Earl R. Loomis, Sharonburg Blvd., Cheswick, archt. A. F. Jones, c/o owner, ch. engr. CD 2/16.

Pa., Clarion—BOILER PLANT—B.A. 9/27—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing, electrical work boiler plant at Clarion Sta Teachers' College. $250,000. Plans deposit $10 each. The Chester Engineers, 210 East Parkway, at Sandusky, Pittsburgh, Zone 12, engrs. CD 2/2.

Pa., Dixmont—ADMISSION—B.A. 9/27—General State Auth., 18 and Herr Sts., Harrisburg, general contract; heating; plumbing; electrical work, elevators for construction admission bldg. at Dixmont State Hospital. $700,000. Plans deposit $10 each, William York Colden, 800 Century Bldg., Pittsburgh, Zone 22, archt. A. F. Jones, c/o owner, ch. engr. CD 12/20.

Pa., Phila.—KITCHEN, etc.—B.A. 9/27—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing, electrical work, elevators for renovations to male kitchen and cafeteria at Phila. (Byberry) State Hospital. $700,000. Plans deposit $15 each. Abraham Levy, 1411 Walnut St., Phila. Zone 2, archt. A. F. Jones, c/o owner, ch. engr. CD 12/20/49.

R. I., Cranston—SCHOOL—B.A. 9/27—City, C. W. Bosworth, supt. Schools, Park Ave., 1 story brick, steel, concrete school, Auburn Sect., Elm Park, Oaklawn Ave. $300,000. Plans deposit $100. Creer, Kent, Mather, Cruise & Aldrich, 413 Industrial Trust Bldg, Providence, archts. CD 3/17/49.

Ont., Ottawa—HEALTH LABORATORY—B.A. 9/27—Act. Secy. Dpt. P. Wks., Ottawa, alterations for Industrial Health Laboratory, 200 Kent St. Approx. $75,000. Plans deposit $15. G. Brault, c/o owner, archt. CD 12/1/43.

Ark., Monticello—STUDENT UNION—B.A. 9/28—Arkansas A. & M. College, Monticello, student union. Plans deposit $50. Bruce R. Anderson, Wallace Bldg., Little Rock, archt.

N. J., Asbury Park—HOUSING—B. A. 9/28—Asbury Park, Housing Auth., housing. Extended date. CD 8/4.

N. J., Port Newark—BOILER PLANT—B.A. 9/28—At office Director Purchase of The Port of New York Auth., 111 8 Ave., New York 11, N. Y., boiler plant for heating Bldg. No. 109, Contr. O & M 107.

O., Rome—SCHOOL—B. A. 9/28—Prairie Local School Dist., c/o Lawrence Karnes, clk., Rome, school. Plans deposit $15. John Quincy Adams, 33-35 S. Champion St., Columbus, archt.

▲ **Pa., Upper Darby**—HIGH SCHOOL—B.A. 9/28—Upper Darby Pa. School Bd., Upper Darby, high school addns. $2,000,000. Baader, Young & Schultze, 1500 Walnut St., Phila., archts. Gravell & Duncan, 1700 Walnut St., Phila., engrs. CD 10/21/48.

Tenn., Knoxville—BUSINESS ADMINISTRATION—B.A. 9/28—University of Tennessee, Knoxville, business administration bldg. Extended date. Bealer & Willsit, Journal Bldg., archts. CD 8/4.

Mass., Carver—SCHOOL—B.A. 9/29—Town, Supt. Schools, Town Hall, 2 story, brick, steel Consolidated School, $325,000. Plans deposit $35, Harry Korslund, 506 Washington St., Norwood, archt. CD 8/27/48.

Tex., Dayton—HIGH SCHOOL—B. A. 9/29—Dayton Independent School Dist., Dayton, high school and remodeling. $450,000. Emory S. White, M & M Bldg., Houston, archt. CD 7/26/49.

Ga., Americus—HOUSING—B. A. About 10/1—Americus Housing Auth., Americus, 150 housing units.

O., Toledo—SCHOOL—B.A. 10/2—Adams Twp. Bd. Educ., Wm. Gravius, clk., Dorr St., school, Krieger Dr. Plans deposit $15. Frank P. Lange & Horace M. Coy, 1716 Heather Downs Blvd., archts. CD 5/9.

▲ **Pa., Altoona**—HOSPITAL—B.A. 10/2—Comrs. Blair Co., Courthouse, Hollidaysburg, 1, 2 and 3 story, bsmnt., 43x213 ft., 43x164 ft., and 43x227 ft. County Home Hospital. $1,200,000. Hunter, Caldwell & Campbell, 3601 5 Ave., archts. CD 12/20/45.

Tex., Dallas—HIGH SCHOOL—B. A. 10/2—Dallas Independent School Dist., Akard and Royal Sts., Northwest Dallas Junior High School. $650,000. George L. Dahl, 2101 N. St. Paul St., archt. Mark Lemmon, 1210½ Main St., consult. engr. CD 2/9.

La., Denham Springs—SCHOOL—B.A. 10/3—Livingston Parish School Bd., Livingston, high school. Plans deposit $25. Extended date. Peyton & Bosworth, Continental American Bank Bldg., Shreveport, archts. CD 8/23.

▲N. Y., Auburn — HOUSING — B.A. 10/3 — Auburn Municipal Housing Auth., Auburn, 118 unit garden apartment, Thornton Ave. and Garrows St., $1,200,000. Plans deposit $25. Beardsley & Beardsley, Seward Bldg., archts.

N. Y., Flushing—HOUSING—B.A. 10/3—New York City Housing Auth., 63 Park Row, New York, Zone 7, foundations and general contract; heating and ventilating; electrical work, plumbing; elevators for Flushing Houses (Proj. No. NYS-52) in area bounded by Long Island R. R., Lawrence St., Roosevelt Ave., Prince St. and westerly portion of area bounded by 40 Rd. Main St. and Long Island R. R., Queens Boro. Plans deposit $75, elevators $25.

▲ Ont., Ottawa—OFFICE—B.A. 10/3—Marani & Morris, archts., No. 4 Building, Lyon St., E-shaped, rein.-con. brick, steel, Head Office Bldg., concrete fdns., on Montreal Rd., for Central Mortgage & Housing Corp., No. 4 Temporary Bldg., Ottawa. Approx. $1,000,000. CD 2/2.

N. Y., Middletown—POWER PLANT—B.A. 10/4—Bureau Contracts & Accounts, Albany, power plant, Middletown Homepathic Hospital. Plans deposit $30. CD 7/12/45.

N. Y., New York—HOSPITAL—B.A. 10/4—Dpt. P. Wks., Municipal Bldg., Zone 7, Contr. 1, general contract; Contr. 2, plumbing; Contr. 3, heating, ventilating air conditioning, refrigeration systems and boiler plant; Contr. 4 electrical work and lighting fixtures for construction tuberculosis hospital, boiler house, laundry, steward's division, garage and maintenance shops, staff quarters and superintendent's houses in Pelham Parkway South and Eastchester Rd., Bronx Boro. Plans deposit; Contr. 1, $50; Contrs. 2, 3, 4 $25; Extended date. CD 8/7.

† Ga., Fort Benning—SHOP—B.A. About 10/5—U. S. Eng., 2301 Grant St., Mobile, Ala., ordnance maintenance shop, Serial No. Eng. 01-076-51-25.

† Washington—WAREHOUSE—B.A. 10/11—Bureau Reclamation, Dpt. Interior, 202 N. 4 Ave., Yakima, Wash., warehouse for Roza Div., Yakima Proj. at Irrigation Headquarters at intersection of 13 and Blaine Sts., Sunnyside, Spec. R1-103.

Fla., Tallahassee—STUDENT SERVICE, etc.—B.A. 10/13—State Bd. Control, Tallahassee, student service bldg. and 2 dormitories. Guy D. Fulton & Assocs., Peabody Hall, Gainesville, archts. CD 3/23.

Fla., Tallahassee—DORMITORIES—B.A. 10/17—State Bd. Control, 10 dormitories at Florida State University. Guy C. Fulton & Assocs., Peabody Hall, Gainesville, archts. CD 3/23.

† N. Y., New York—HOSPITAL EXCAVATION, etc.—B.A. 10/23—U. S. Eng., 80 Lafayette St., Zone 13, excavation, grading and piles for Veterans Admin. Hospital, E. 23 St. and First Ave., CIVENG 30-075-51-30. CD 1/20.

Fla., Orlando—HOUSING—B.A. 10/25—Orlando Housing Auth., c/o F. Earl DeLoe, archt., 6 W. Church St., Orlando, Orlando Reeves Terrace Housing addn., incl. 90-unit apartment and 45 duplex type homes.

LOW BIDDERS

Ala., Fort Payne—HOUSING—Fort Payne Housing Auth., Fort Payne, Sept. 8, 50 housing units, from Home Bldg. Co., Alabama City, $420,000. CD 9/8, under LB.

▲ Conn., Hartford — HOUSING — Hartford Housing Auth., 864 Asylum Ave., Sept. 11, Housing Project Conn. 3-5, from F. H. McGraw Co., 780 Windsor St., $6,863,661. CD 9/7.

Conn., Norwich—LAUNDRY—State, R. S. Thatcher, comptroller, State Capitol, Hartford, Sept. 6, Laundry Bldg. at State Hospital B/A-K-53, from Associated Constr. Co., 1010 Wethersfield Ave. Hartford, $408,900.

Conn., Shelton—SCHOOL—City, Finance Comm., 40 White St., Sept. 6, school, from P. Franchini & Co., Francis St. New Haven, $414,776. CD 8/24.

Fla., Tampa—HOUSING—Tampa Housing Auth. c/o M. Leo Elliott, archt., Citizens Bldg., Aug. 30 College Hill Homes Housing, from Settecasi & Chillura, 2101 5 Ave., $809,900. CD 8/11.

▲ Ga., Athens—SCHOOL—City, Sept. 6, high school, from rosland Constr. Co., 1632 Harden St., Columbia, S. C. $1,125,000. CD 8/10.

▲ Ga., Moultrie—HOUSING—Moultrie Housing Auth., Moultrie, Sept. 6, housing units, from Delta Constr. Co., Brunswick. $1,197,767. CD 8/4.

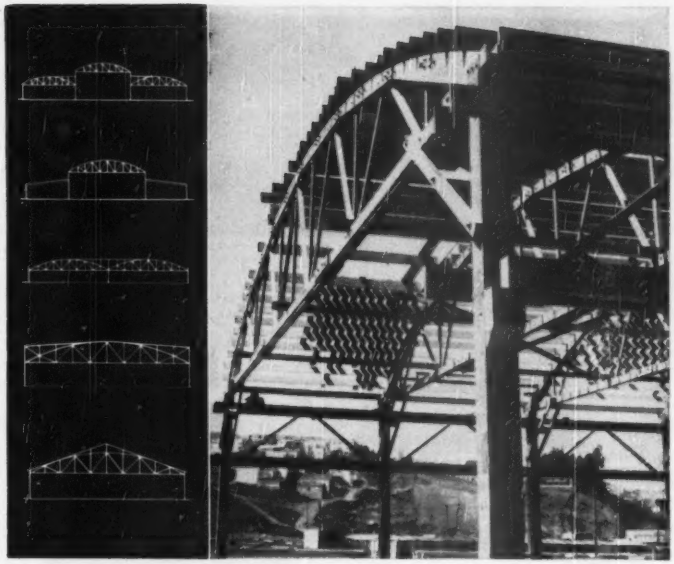
Kan., Topeka—SCHOOL—Bd. Educ., Aug. 24, general contract, grade and junior high school, from Casson Constr. Co., 603 Topeka St. $505,613. CD 8/8.

La., Lafayette—WAR MEMORIAL—Lafayette Parish Police Jury, rejected bids Sept. 7, war memorial bldg. L. B. $549,696. CD 8/11.

Md., Loch Raven—COTTAGES—State, Dpt. P. Improvts., 506 Park Ave., Baltimore, Zone 1, Sept. 1, 1 story, 110x156 ft. H-shaped concrete block, brick, Junior Group of 4 cottages and training school for boys, from Land & Simmons Co., 3922 Hickory Ave., Baltimore, $795,900; underground steam lines for Training School for Boys, from J. H. Lawrence Co., 2600 Huntington Ave., Baltimore, $83,274 base, $184,884 alternate. CD 8/24.

Md., Owings Mills—POWER PLANT—State, Dpt. P. Improvts., 506 Park Ave., Baltimore, Zone 1, Sept. 6, power plant addn., alterations Rosewood State Training School, from Chas. T. King, 1017 Cathedral St., Baltimore, $649,741. CD 10/26/49.

Md., Sykesville — POWER PLANT — State, Dpt. P. Improvts., 506 Park Ave., Baltimore, Zone 1, Sept. 8, power plant addn., 2 boilers, Springfield State Hospital, from H. E. Crook Co., Inc., 28 Light St. Baltimore, $203,300. CD 8/24, under Mo., Catonsville.



Arch Teco Bowstring Truss

...Handyman of Roof Structures

Here is a truss that does more than play first fiddle—it leads the whole orchestra as well.

It provides enduring, economical construction whether the span is 25 feet or 250 feet. Normal roof contour is arched, but by use of various build-ups it may be flat, pitched or sawtooth. Web members may be extended below the bottom chord to support mezzanines, balconies, walkways, canopies, etc.

Various treatments of multiple span buildings are illustrated above. Local loadings such as hoists, monorail installations and heating and cooling units may be accommodated in the design.

Unobstructed floor space is provided for efficient operations, yet the cost frequently is less than post-and-girder construction.

Carefully engineered, constructed of structural quality Douglas fir timbers, and joined with bolts and split ring connectors, Timber Structures Arch Teco bow-string trusses are exceptionally strong and stiff. Camber is high after load is placed and is easily maintained.

A new catalog of Timber Structures roof trusses will soon be off the press. Get a free copy from the Timber Structures office nearest you, or write directly to us.

TIMBER STRUCTURES, INC.

P.O. Box 3782-B • PORTLAND 8, OREGON

Offices in Boise, Idaho; Eugene, Oregon; Lawrenceville, N.J.; Chicago; Dallas; Kansas City; New York; Seattle; Spokane

TIMBER STRUCTURES, INC., OF CALIFORNIA — Oakland and Sacramento

Local Representatives Coast to Coast

M & H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

The wide use of Standardized Mechanical Joint Cast Iron Pipe for water supply systems has created an urgent demand for Mechanical Joint Valves, Hydrants and Accessories. M & H has been a leader in recognizing this important trend and can supply AWWA Gate Valves with Mechanical Joint ends, in sizes 2" to 30" inclusive . . . . Mechanical Joint Cutting-In-Sleeves . . . . and Mechanical Joint Hydrants in all sizes and all types.

M & H Mechanical Joint features are: Ease and speed of installation, construction economy, joint deflection, leak-tight, long life. Used with AWWA, Classes A, B, C, D; Federal Specification WW-P-421; or Classes 100, 150, 200, 250 Centrifugal Pipe.

Fig No. 67M

WRITE FOR CIRCULAR NO. 49

Our New Circular No. 49 shows important installation dimensions of M & H AWWA Mechanical Joint Hydrants and Valves . . . . Underwriters and Associated Factory Mutual approved Post Indicator Valves . . . . and Cutting-In Sleeves.

M & H Products • *Everywhere*

"Gunite" . . . . . the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES — ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE "CEMENT GUN"

PHOENIX BRIDGE COMPANY
Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS
General Office and Shops
PHOENIXVILLE, PA.
Subsidiary—Barium Steel Corporation

Mass., Concord—SCHOOL—Town, L. A. Murray, chn. Bldg. Comn., Sept. 7, brick, concrete, steel school, Laurel and Stowe Sts., from Tocci Bros. Constr. Co., 38 Colonial Ave., **Newton, $422,527.** CD 8/16.

Minn., Minneapolis — LABORATORY — University of Minnesota, 323 Administration Bldg., Main Campus, Sept. 6, general contract research laboratory and physics bldg. addn., from Viking Constr. Co., 2624 E. Lake St., **$416,000.** CD 8/31.

N. J., Morristown—SCHOOLS—Bd. Educ., 50 Early St., Sept. 11, Washington school addn. and new Fourth Ward School, from Becker Constr. Co., 361 Grove St., **Newark, $519,227** and **$409,054** respectively. CD 9/8.

O., Cuyahoga Falls—HOSPITAL—Dpt. P. Wks., Ohio Dpts. Bldg., Columbus, Aug. 31, general contract, mental receiving hospital, Tallmadge Rd., just east of downtown, from Weinstein Constr. Co., 573 E. Talmadge St., Akron, **$484,600.** CD 8/4.

Pa., Laurelton—HOUSING—General State Auth., 18 and Herr Sts., Harrisburg, rejected bids Aug. 2, general contract addnl. housing for patients, 3 cottage-type units at Laurelton State Village. L. B. $549,-999. Will re-advertise. CD 8/7, under LB.

Tenn., Union City—HOUSING—Union City Housing Auth., Union City, rejected bids Aug. 25, 40 housing units. CD 8/15.

Va., Waynesboro—SCHOOL—City, Aug. 24, Waynesboro Junior High School, from J. S. Mathers, Waynesboro, **$439,408.** CD 8/10.

Va., White Gate—INSTITUTION—State of Virginia, Richmond, Aug. 31, Dormitories 1 and 2 at Bland County Correctional Farm, near here, from Trinkle & Dobyns, Dublin, **$434,900.** CD 8/4.

B. C., Coquitlam—HOME—Province of British Columbia, Parliament Bldg., Victoria, 100-bed unit at Home for Aged, from E. H. Shockley & Son Ltd., 1936 Powell St., Vancouver, **$249,309.** C. Campbell, Parliament Bldgs., Victoria, archt.

† **Alaska, Fort Richardson**—ENLISTED MEN'S SERVICE CLUB—U. S. Eng. (APO 942, c/o PM, Seattle, Wash.), Anchorage, Sept. 7, 2 story, bsmnt., 15,000 sq. ft. concrete enlisted men's service club, Inv. No. S95-507-51-9, from Morrison-Knudsen Co., Inc., and Peter Kiewit Sons Co., 1300 Aloha St., Seattle, Wash. $520,000. CD 8/16.

CONTRACTS AWARDED

† **Calif., Lompoc**—CAMP REHABILITATION—U. S. Eng., 751 S. Figueroa St., Los Angeles, rehabilitate Camp Cooke carpentry and appurtenant work, to Zoss Constr. Co., 1037 N. Cole Ave., Los Angeles, **$428,964.** Bids 9/6. Col. W. D. Luplow, engr.

▲ **Conn., Bristol**—HOUSING—City of Bristol Housing Auth., Cambridge Park Div., of Bristol, 122-unit housing, Project MR-21A, to Anderson Fairoaks Constr. Co., 141 S. Marshall St., Hartford, **$1,317,-500.** Bids 8/18. CD 8/29, under LB.

Fla., Tampa—SCHOOL—Hillsborough Co., Bd. P. Instruction, Tampa, Oak Grove Junior High School, to Chester Mabry Constr. Co., 1529 Grand Central Ave., **$284,362.** Bids 9/7. CD 8/30.

† **Ga., Hinesville**—BUILDING—U.S. Eng., Post Office Bldg., Savannah, Ga., rehabilitation 300 bldgs. at Camp Stewart, to Georgia Consolidated Constr. Co., Manchester, **$802,467.**

▲† **Idaho, Arco**—LABORATORY—Atomic Energy Comn., 1901 Constitution Ave., N.W., Wash., D. C., 132x260 ft., steel, masonry concrete laboratory, to F. H. McGraw & Co., 780 Windsor St., Hartford, Conn., **$1,247,000.** CD 8/24, under LB.

Ill., Watseka — HOSPITAL — Iroquois Hospital Bd. Trustees, Watseka, Iroquois Hospital addn., to John Felmley Constr. Co., Bloomington, **$339,000.** Awarded 9/8.

Ky., Hazard—SCHOOL—Bd. Educ. Perry Co., 2 story, 57x284 ft. high school, to Associated Contractors, Marion, Va., **$346,082,** H. A. Spalding, Bakers Bldg., archt. Alfred Marcum, 489 Bobolink Dr., Lexington, engr.

La., New Orleans—HOSPITAL—Charity Hospital, 1532 Tulane Ave., altering third floor of Charity Hospital neuropsychiatric unit, to Perrilliat-Rickey Constr. Co., 1530 S. Rendon St., **$493,664.** Awarded 9/5. CD 8/18, under Commercial Buildings.

▲ **Md., Baltimore**—SCHOOL—City, Bureau Bldg., Constr., 410 Municipal Bldg., Zone 2, steel, brick, concrete, cinder block Cherry Hill Elementary School (colored) Cherry Hill and Seabury Rds., to Philip Vizzini & Son, 504 Stamford Rd., $1,047,782. Est. $900,000. CD 9/6, under LB.

▲ **Md., Columbia**—MEMORIAL UNION—Curators of University of Missouri, c/o Leslie Cowan, secy., 2 story, 150x166 ft., brick, stone, rein.-con. Memorial Union Bldg., to John Epple Constr. Co., 1417 Hickory St., $1,063,000; heating, ventilating, air-conditioning, to J. Louis Crum, Columbia, $454,938. Bids 9/6, awarded 9/8. CD 9/12.

N. Y., Manhasset—HOUSING—North Hempstead Housing Auth., Valley School, Manhasset, Spinney Hill Homes, to Lasker Goldman Corp., 161 Remsen St., Brooklyn, Zone 2, $793,000. Bids 8/30. CD 8/11, under N. Y., Port Washington.

N. C., Reidsville—SCHOOLS—Reidsville Graded School Dist., Reidsville, 2 schools, to L. B. Gallimore, Greensboro, $600,630. CD 7/31, under LB.

O., Ravenna—SCHOOL—Bd. Educ., H. Larry Brown, supt., Ravenna, general contract. School in Chestnut Dist. to Barkes & Porthouse, Ravenna, $298,360. Bids 8/16. CD 7/31.

Okla., Stillwater—CLASSROOM—State Bd. Regents, Capitol, Oklahoma City, Zone 5, 4 story, bsmnt. classroom bldg. at Oklahoma A & M College, to Manhattan Constr. Co., First Natl. Bldg., Oklahoma City, Zone 2. $849,377. Bids 9/12. CD 8/24.

Okla., Pauls Valley—DORMITORY, etc.—Bd. of Affairs, Capitol, Oklahoma City, Zone 5, employees dormitory, womens ward bldg. and mens ward bldg. at Pauls Valley State Hospital, to Dennehey Constr. Co., 514 W. Noble St., Oklahoma City, Zone 3, $750,532. Harold Flood, Ardmore, archt. Bids 8/29.

Okla., Supply—EMPLOYEES DORMITORY—Bd. Affairs, Capitol, Oklahoma City, Zone 5, employees dormitory for Western Oklahoma Hospital to W. L. Scott, Sulphur, $560,810. Bids 9/12. CD 8/24.

Pa., Norristown—NURSES HOME—General State Auth., 18 and Herr Sts., Harrisburg, general contract nurses home at Norristown State Hospital to L. F. Driscoll Co., 18 W. Chelton Ave., Phila., $612,000. Bids 8/23, awarded 9/5. CD 8/28, under LB.

▲ **Tex., San Antonio**—HOSPITAL—City and Bexar Co., Courthouse, Robert G. Green Hospital remodeling and expans. to Walsh & Burney, 928 N. Flores St. $1,294,797. Bids 7/26. CD 8/1, under LB.

Va., Danville—BUILDING—City, construct gas, water and electric service bldg., to John W. Daniel & Co., Danville. Charles T. Main, Inc., 80 Federal St., Boston, Mass., engrs. and archts. CD 9/25/47.

B. C., Boundary Bay—HOUSING—Central Mortgage & Housing Corp., 360 Homer St., Vancouver, 36 housing units, to Vancouver Associated Contractors Ltd., 815 W. Hastings St., Vancouver, $284,785. Awarded 8/28. J. L. Adams, 360 Homer St., Vancouver, engr.

▲ **B. C., Esquimalt**—HOUSING—Central Mortgage & Housing Corp., 360 Homer St., Vancouver, 209 new housing units, to Commonwealth Constr. Co., Ltd., 670 Taylor St., Vancouver. $2,094,169. Awarded 8/28. J. L. Adams, 360 Homer St., Vancouver, engr.

▲ **Newfoundland, Corner Brook**—CEMENT PLANT—Dpt. P. Wks., Saint John, and Miag Ltd., Germany, cement plant at Mount Moriah, to William J. Lundrigan, Corner Brook, Approx. $3,500,000. CD 8/14.

Ont., Barriefield—SCHOOL—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 18-classroom school at Canadian Army Camp, to T. L. Smith, Constr. Co. Ltd., 300 Napier St., Kingston, Approx. $500,000. Bids 9/7. CD 8/18.

COMMERCIAL BUILDINGS

BIDS ASKED

Ala., Greenville—CHURCH—B.A. 9/27—Greenville Baptist Church, c/o Chas. H. McCauley, archt., Jackson Bldg., Birmingham, church. Plans deposit $25.

Tenn., Maryville—CHURCH—B.A. 10/2—New Providence Presbyterian Church, c/o Charles L. Bolton, archt., 1505 Race St., Phila., Pa., 50,000 sq. ft. church. Extended date. CD 9/1.

▲ **Pa., Bryn Mawr** — HOSPITAL — B.A. 10/10 — Bryn Mawr Hospital, Bryn Mawr, hospital and nurses dormitory. $1,800,000. Schmidt, Garden & Erikson, 104 S. Michigan St., Chicago, Ill., archts. CD 1/26/49.

▲ **Fla., Green Cove Springs**—HOUSING—Bids Asked—Bureau Yards & Docks, Navy Dpt., Arlington, Va., construct, manage and finance, 392 unit housing, $2,232,000. Marsh & Saxelbye, Hildebrandt Bldg., Jacksonville, archts.

Kan., Olathe — HOUSING — Bids Asked — Dpt. Navy, Arlington, Va., construct, manage, finance 160 unit housing. Leo O. Daley, Insurance Bldg., Omaha, Neb., archt. CD 1/19.

N. C., Cherry Point—HOUSING—Bids Asked—Bureau Yards and Docks, Navy Dpt., Arlington, Va., construct, manage and finance 1,054 units housing, Marine Corps Air Station. Ed Pugh & McKimmon, Varland & Martini, 743 W. Johnson St., Raleigh, archts.

Tenn., Memphis—HOUSING—Bids Asked—Dpt. of Navy, Arlington, Va., construct, manage and finance, 540 housing units. Wm. C. Lester, 626 Dermon Bldg., archts.

SOON LETS CONTRACT

S. D., Sioux Falls—HOSPITAL—Crippled Children.s Hospital, Sioux Falls, soon lets contract hospital. $260,000. Hugil, Blatherwick & Fritzel, 367 Boyce Greeley Bldg., archts. CD 4/13.

Tex., San Antonio—HOUSE OF STUDIES—St. Marys University, 112 College St., soon lets contract, house of studies. $275,000. Julian & White, 2901 Transit Tower, archts. Frank T. Drought, 117 W. Pecan St. and Martin E. Staley, 31 Chandler Bldg., engrs. CD 7/27.

LOW BIDDERS

S. D., Rapid City—HOSPITAL—St. John's McNamara Hospital, Rapid City, Aug. 30, general contract hospital addn., from M. A. Garland Constr. Co., Rapid City, $548,767. CD 8/17.

CONTRACTS AWARDED

▲ **Conn., West Hartford**—HOUSING—Wm. M. Moore Building Corp., 75 W. 190 St., New York, N. Y., 302 houses. Owner builds. $3,775,000. Irving W. Rutherford, 49 Garden St., Hartford, archt.

Minn., Minneapolis—APARTMENT—West Calhoun Apartments, c/o contractor, general contract 6 story, 87x126 ft. 62 unit apartment, to Lovering Constr. Co., 616 Guardian St., St. Paul, $400,000. P. E. Crosier & Son, 2441 Lyndale Ave. S., archt.

Mo., Kansas City—OFFICE—Marley Co., Inc., Fairfax and Marley Rds, office Gregory Blvd. and Brookside Rd., to Swenson Constr. Co., 3305 Terrace St., Zone 2, $400,000, Keene & Simpson, 15 W. 10 St., Zone 6, archts.

Mo., Kansas City—GARAGE—Twin Oaks, 50 and Oak Sts., Zone 2, 325 car underground garage and garden terrace on roof for Twin Oaks Apartment, to Patti Constr. Co., 1340 Admiral Blvd., Zone 1, $500,000. Awarded 9/1. CD 8/1.

▲ **Mo., St. Louis**—HOUSING—Hampton Garden Apartment, Inc., 1207 Delmar Blvd., Zone 3, forty-five 2 story, and fourteen 3 story brick, concrete bldgs. on site leased from city between Hampton, Scanlan, Fyler Aves. and Jasper Park, separate contracts. $5,000,000. CD 12/9/49.

N. C., Charlotte—COMMUNITY—North Charlotte Foundation, Inc., David Johnson, pres., c/o J. N. Pease & Co., Inc., archt., 1191½ E. 5 St., 2 story bsmnt. community bldg., 2900 block of N. Caldwell St., in North Charlotte, to J. A. Jones Constr. Co., 209 W. 4 St., $400,000.

Tex., San Antonio—DWELLINGS—Quincy Lee & Assoc., Gunter Bldg., 50 dwellings, off West Ave. Place, Approx. $425,000; 34 additional dwellings, Byrnes, Oakley Sts. etc., Approx. $250,000. Owner builds. CD 8/31 and 8/23.

Tex., San Antonio—DWELLINGS—H. B. Zachry Co., Box 2570, 20 high-type dwellings. Owner builds. Approx. $400,000. CD 9/5.

Utah, Provo—STORE—Sears Roebuck Co., 2650 E. Olympic Blvd., Los Angeles, Calif., 2 story, 48,000 sq. ft. modern concrete store, to Talbot & Harlin Constr. Co., Provo, Approx. $500,000. Walter Wagner, Fulton Fresno Bldg., Fresno, Calif., archt.

Va., Richmond—HOUSES—South Side Gardens, c/o contractor, 120 brick homes at new sub-division to be called South Side Gardens, east of Petersburg Pike at Stop 4, between the Pike and Ninth St. Rd., to Ernest E. Mayo, Warwick Rd. Approx. $800,000.

INDUSTRIAL BUILDINGS

BIDS ASKED

N. C., Charlotte—WAREHOUSE—B.A. 9/26—Wholesalers Auto Parts, c/o Mangum W. Sloan, archt., 215 Latta Arcade, warehouse and office.

Wis., Milwaukee—BRANCH HOUSE—B.A. 9/26—Oscar Mayer Co. 810 Mayer St., Madison, 133x211 ft., steel, brick branch house. Henschien, Everde & Crombie, 59 E. Van Buren St., Chicago, Ill., archts.

La., Ferriday—WAREHOUSE, etc.—B.A. 9/28—Concordia Electric Co-operative, Ferriday, warehouse and office. $68,000. Plans deposit $10. Biggs, Weir & Chandler, 224 N. Congress St., Jackson, Miss., archts. CD 4/28 under Unclassified.

S. C., Columbia—BOTTLING PLANT—B.A. 9/28—Lumpkin Holding Co., c/o G. Thomas Harmon, archt., 3350 Millwood Ave., bottling plant, garage and warehouse. Approx. $75,000. Plans deposit $25.

Ont., Fort William—FREIGHT SHED—B.A. 9/28—J. L. Charles, ch. engr. (Western Region) Canadian National Rys., Winnipeg, Man., 50x280 ft. brick, concrete freight shed and office, Vickers and John Sts. Approx. $170,000. CD 6/30.

Pa., Phila.—TRUCK TERMINAL—B.A. 9/29—Roadway Express, Inc., c/o Louis T. Klauder & Assoc., engrs. Lincoln Liberty Bldg., truck terminal. $180,000. CD 8/31.

Pa., Phila.—SALES and SERVICE—B.A. 10/1—Benedict D. Kahans, 2354 77 Ave., auto sales and service bldg. Approx. $60,000. Frank Weise, 2016 Walnut St., archt. CD 8/15.

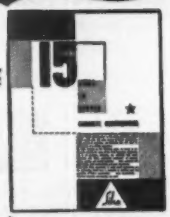
SOON LETS CONTRACT

La., New Orleans—WAREHOUSE—Glidden Paint Co., 428 Josephine St., soon lets contract, Part I, 2 story steel, masonry warehouse, Josephine and Tchoupitoulas St. August Perez & Assoc., Audubon Bldg., archts.

FOR CONCRETE RESULTS LIKE THESE

30% Harder Surface
40 to 100% Better Bond to Steel and Aggregate
20% Higher Flexural Strength
80% Higher Resistance to Injurious Solutions
16% Lower Shrinkage
Higher Resistance to Cracking and Crazing
Higher Resistance to Water, Corrosion, Erosion and Abrasion
plus
Greater Workability, Controlled Set, Faster Placing, Better Finishing

Send for this new book Today . . .



Lists illustrated information and performance data on PLASTIMENT CONCRETE ... its greater workability, its greater field economy, its superior results, and its extra durability factors for jobs which require your guarantee. Discusses 14 additional materials for construction, engineered for coating, sealing, hardening and repair work on concrete and masonry. Complete with product descriptions and composition, specific uses, contributing properties and Architect's Specifications. To obtain your free copy, write today or use the coupon below.

*

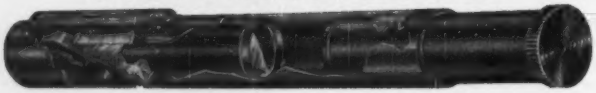
Results obtained with PLASTIMENT CONCRETE, taken from test reports and records of U. S. ENGINEER CORPS, PUBLIC ROADS ADMINISTRATION, SMITH EMERY COMPANY, and other independent laboratories, confirmed by performance records on worldwide installations totaling millions of cubic yards of concrete. PLASTIMENT and other Sika products have been tested and approved on Federal, State and Municipal projects and are approved under Building Codes of principal cities.

SIKA
CHEMICAL CORPORATION
30 GREGORY AVENUE
PASSAIC, NEW JERSEY

Send me a copy of your new book on materials of concrete construction.

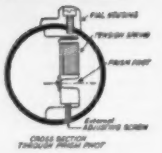
Name _____
Company _____
Street Address _____
City _____ *Zone* _____
State _____

Only STRATEX has the *3 Most Wanted Features* In a Hand Level!



Comprehensive Surveys of field engineers, contractors, and mine operators showed these 3 *most wanted features* in a hand level—

1. **Adjustment by rotation of the index prism, without dismantling, from the outside of the instrument—even while wearing gloves in frigid weather.**
2. **A slow gliding bubble for gusty weather.**
3. **Parts replacement in a jiffy with the tools every man has in his pocket.**



CROSS SECTION THROUGH PRISM UNIT

Only STRATEX levels have all 3 of these features—and MORE! Easily adjusted within a minute, even by unskilled helpers. Your field work is speeded—Your time and money saved!

Order STRATEX levels from your dealer today! If out of stock —Factory shipments from Dept. ENR-1.

FRANCISCAN STADIA LEVEL, ratio 1:20 **$11.50**

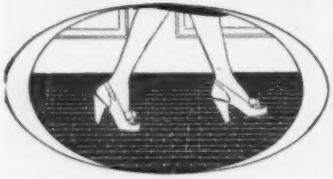
SILVER CITY LOCKE TYPE LEVEL **$10.00**

—in Western Saddle leather cases, unconditionally guaranteed!

STRATEX INSTRUMENT CO. — Mfrs. of Engrs. for SCIENTISTS
1861 HILLHURST AVE., LOS ANGELES 27, CALIF. U.S.A.

DISTRIBUTORS: Pittsburgh, Cleveland, Detroit—*B. K. Elliott Co.;* Washington, D. C.—*Kinsman Optical;* Chicago—*U. S. Blue Print Co.;* Fort Worth, Texas—*P. C. Goodspeed Co.,* 612 East 2nd Street. In Denver—*E. S. Hubbell Company,* 110 West 13th Avenue

THE SAFE OPEN STEEL FLOORING IS TRI-LOK



No object over ½ square inch can pass through super-safe U-Type Tri-Lok Flooring. It is unsurpassed for plant installation, walkways, loading platforms. Maximum strength, air and light with minimum weight. Efficient distribution of concentrated loads. Write for Bulletin JX 1140.

The Tri-Lok Company is also equipped to furnish *riveted* and Tri-Forge *welded* open steel flooring. Tri-Lok can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc.

DRAVO CORPORATION

National Distributor for the **Tri-Lok Company**
Dravo Bldg., Pittsburgh 22, Pa.
Sales Representatives in Principal Cities

DRAVO

GROUTER AND PEA SHOOTER COMBINED IN 1 UNIT!

MAYO

FREE Bulletin Describes Money-Saving Combination

Mayo Pneumatic Grouter lowers equipment costs because it's readily converted into pea shooter . . . does "double duty." Places low pressure grout in tunnels, mines, railroad subgrades, sunken pavements . . . injects chemical emulsions for soil stabilization.

MAYO
TUNNEL & MINE EQUIPMENT
Robert S. Mayo
Civil Engineer
LANCASTER, PA.

Mo., St. Louis—WAREHOUSE—Falstaff Brewing Corp., Harvey Baffa, vice pres. and genl. mgr., 3617 Olive St., Zone 3, soon lets contract, 1 story, 250x650 ft., corrugated asbestos siding, steel, concrete, masonry warehouse, on 10¾ acre tract on S. Kingshighway Blvd. and McRee Ave. O. W. Stiegemeyer, 452 S. Price Rd., Ladue, Zone 5, archt. CD 4/25/48.

▲ **N. Y., West Albany**—SMOKE HOUSE—Tobin Packing Co., Albany Packing Div., Exchange St., soon lets contract, smoke house addn. to meat packing plant, Exchange St. and Russell Rd. $1,000,000. CD 8/25, under N. Y., Albany.

Pa., Pittsburgh—WAREHOUSE—General Electric Supply Corp., 422 Duquesne Way, soon lets contract 2 story, 27x185 ft. and 95x125 ft. brick, block, steel frame warehouse and office, River Ave. $500,000. Hunting, Larsen & Burnett, Century Bldg., archts.

Va., Suffolk—AUTO SALES and SERVICE—Blair Motor Co., c/o Paul D. Woodward, archt., 616 Boush St., Norfolk, soon lets contract, auto sales and service bldg. Approx. $68,000.

LOW BIDDERS

Fla., Bartow—PLANT OFFICE—International Mineral & Chemical Co., Bartow, office for plant from Paul Smith Constr. Co., 310 N. Rome Ave., Tampa, $273,865. CD 9/8.

CONTRACTS AWARDED

▲ **Ill., Joliet**—FACTORY, etc.—Caterpillar Tractor Co., State Route 6 and Des Plaines River, 688,000 sq. ft. factory and office, and water tank, to Gust K. Newberg Co., 2040 N. Ashland St., Chicago, Zone 14. $7,000,000. Bids 8/29, awarded 9/8. CD 8/23.

Ill., Rockford—MACHINE SHOP—Eclipse Fuel Eng. Co., 711 S. Main St., general contract 1 story, 147x276 ft., concrete block, steel storage, machine shop and fabricating facilities, to Scandroli Constr. Co., 823 N. Madison St. $200,000. Bradley & Bradley, Brown Bldg., archts.

▲ **Kan., Kansas City**—PLANT—Pure Carbonic Co., Div. Air Reduction, Inc., 111 W. 22 Pl., Zone 8, plant, to J. F. Pritchard & Co., 908 Grand St., Zone 6, $1,000,000.

Kan., Kansas City—PLANT—Wilson & Co., 4100 S. Ashland St., Chicago, Ill., 197x220 ft. branch packing house plant addn., to Wm. S. Rawlings, 1004 Forest St., approx. $400,000. Bids 8/5. CD 8/9.

Ky., Louisville—WAREHOUSE—American Radiator & Standard Sanitary Mfg. Co., 834 E. Broadway, warehouse and pipe yard, to Ale Bornstein, Logan St., Zone 3, $215,000. Bids 9/1, awarded 9/5. CD 8/29.

▲ **Md., Baltimore**—ELECTRIC GENERATING STATION—Consolidated Gas, Electric Light & Power Co., Lexington Bldg., Zone 1, exten. electric generating station, electric utility power house, turbine room and boiler house, steel, asbestos, 15x240 ft. high self supporting stack, 2105 Gould St. Owner builds. $2,095,000.

Minn., St. Paul—SHOP—American Hoist & Derrick Co., 63 S. Robert St., 1 story, 100x359 ft., concrete, steel revolver, derrick, structural steel shop addn. and generator house, to W. Baumeister Constr. Co., 624 Hamm Bldg. $242,000. Bids 6/19. CD 6/7.

Mo., St. Louis—WAREHOUSE, etc.—James R. Kearney Corp., 4236 Clayton Ave., Zone 10, 2 story, bsmnt., 65x118 ft., brick, concrete warehouse and office addn., 4241 Sarpy Ave., to Fruin-Colnon Contg. Co., 1706 Olive St., Zone 3. Approx. $150,000.

▲ **N. C., Kinston**—PLANT—E. I. du Pont de Nemours & Co., du Pont Bldg., Wilmington, Del., nylon rayon plant on 635 acres site on Neuse River between Kinston and Grainger. Owner builds. Approx. $24,000,000. CD 9/11.

▲ **O., Shadyside**—PLANT—Kaiser-Frazer Corp., Willow Run, Detroit, Mich., pressed steel stamping plant on 65 acre tract on Ohio River Shore, to Seabright Constr. Co., Box 830, Wheeling, W. Va. Approx. $3,000,000.

O., Toledo—PLANT—Libbey-Owens-Ford Glass Co., Nicholas Bldg., 100x140 ft., yellow brick facing, steel chemical plant for production of alkyd molding compounds, to Blaw-Knox Co., 321 Penn Ave., Pittsburgh, Pa. Approx. $500,000.

▲ **O., Youngstown**—BOILER HOUSE—Republic Steel Corp., 335 Market St., 51x144 ft. steel boiler house, west of Center St. bridge, north side of Mahoning River, to United Engineers & Constructors, Inc., 1401 Arch St., Phila., Pa. Approx. $10,000,000. CD 1/26.

Pa., Irwin—SERVICE STATION—Gulf Oil Corp., Gulf Bldg., Pittsburgh, 1 story, bsmnt., 47x116 ft. irregular, stone service station and restaurant, to Allegheny Building Co., 9 and Bingham Sts., Pittsburgh. Approx. $250,000.

Pa., Washington—PLANT—Washington Steel Corp., Washington, 1 story, 30x515 ft. metal siding, steel pickling plant addn., to Brownsville Constr. Co., Brownsville. Approx. $125,000. J. H. Hopkins & Co., Alliance, archts.

Tex., Coleman—REFINERY—Anzac Oil Corp., Coleman, gas injection refinery units, own forces. $675,000. CD 2/6.

Tex., Colorado City—PUMP STATION—Pan-American Pipe Line Co., M. Esperson Bldg., Houston, enlarging newly-constructed pump station, near here, to Brown & Root, Inc., Box 3, Houston. $125,000.

Tex., Donna—WAREHOUSE—Grove-Wearden Co., Victoria, warehouse, to Fitzgerald & Bradshaw, Box 905, and Braden Steel Corp., Donna, $73,150. CD 9/8.

Tex., Eckert—PUMP STATION—Humble Oil & Refining Co., 1216 Main St., Houston, pump station, near here, own forces. Approx. $375,000. CD 9/6.

Tex., Houston—PLANT—Leonard C. Miller, 2503 Evergreen St., dairy products plant units, own forces. $175,000. CD 4/1/49.

Tex., McKinney—FACTORY—Texas Textile Mills, McKinney, addnl. textile factory expansion, imprvs., Purchase and Hire. Approx. $90,000. CD 9/5.

Tex., Marble Falls—PUMP STATION—Humble Oil & Refining Co., 1216 Main St., Houston, pump station (to increase capacity), near here, to Morrison Constr. Co., Odessa. Approx. $285,000.

Wis., Clyman—WAREHOUSE, etc.—Clyman Canning Co., Clyman, 1 and 2 story, 130x160 ft., concrete, steel, concrete block, warehouse and office, to Rohde & Kapelle, Juneau. Wm. G. Herbst & Assocs., 1249 N. Franklin Pl., Milwaukee, Zone 2, archts.

Wis., Milwaukee—GARAGE—Wisconsin Telephone Co., 722 N. Broadway Zone 2, 1 story, 90x140 ft., concrete, steel, brick garage, to A & A Peters Co., 3640 N. Humboldt Ave., Zone 12, Approx. $68,000. R. F. Clas, 524 E. Mason St., Zone 2, archt.

▲ Alta., Edmonton—PLANT—Canadian Industries, Ltd., Beaver Hall Hill, Montreal, Que., commercial explosive plant, 8 mi. south of central Calgary, to Poole Constr. Co. Ltd., 10503 109 St. Approx. $3,000,000. Stuart, Hawkins, c/o owner, archt. CD 6/19, under Alta., Calgary.

Que., Joliette—WAREHOUSE—Pinatel Piece Dye Works Ltd., Archambault Ave., 1 story, 80x191 ft., brick, cement walls, steel warehouse, Archambault Ave., to Delorimier Constr. Ltd., 44 Port Royal Ave., Montreal, Approx. $200,000. CD 8/4.

Que., Montreal—WAREHOUSE—Commercial Leaholds Ltd., 130 Ferguson Ave., Hamilton, Ont., warehouse, Royden Ave., Owner builds, $250,000.

Que., Quebec City—WAREHOUSE, etc.—Firestone Tire & Rubber Co. of Canada Ltd., 63 Charest Blvd., Quebec City, 1 story, 40x200 ft., steel concrete block, brick warehouse and office, St. Sacrement Ave., to W. Rourke Ltd., 2 Chameau Ave., Quebec City, Approx. $150,000. F. A. Walker, 2 Belvedere Ave., Quebec City, archt.

UNCLASSIFIED

BIDS ASKED

N. Y., New York—PEDESTRIAN PASSAGEWAY—B.A. 9/25—President Manhattan Boro, Municipal Bldg., Zone 7, pedestrian passageway through Windsor Towers Bldg. on 1st Ave. between E. 40 and E. 41 Sts., etc. in connection with construction tunnel in 1st Ave., vicinity of United Nations Site with ramp approaches, etc. between E. 40 and E. 49 Sts. Plans deposit $10.

Va., Chatham—DAM—B.A. 9/25—Comn. of Game & Inland Fisheries, Commonwealth of Virginia, 7 N. Second St., Richmond, construct necessary structures, appurtenances for dam in Pittsylvania Co., near here. Plans deposit $10. R. Sturat Royer & Assoc., 401 Virginia Bldg., Richmond, Zone 19, engrs.

Manitoba—ALTERNATOR SET, etc.—B.A. 9/25—J. S. MacDiarmid, Dpt. Mines & Natural Resources, Winnipeg, engine driven alternator set and control equip. for Pine Falls development on Winnipeg River. Manitoba H-E Bd., Winnipeg, engr.

Illinois—RURAL DISTRIBUTION LINES—B.A. 9/26—Wayne White Counties Electric Co-operative, O. J. Chaney, mgr., 212 E. Court St., Fairfield, about 16 mi. 69 kv electric transmission lines and 23.6 mi. 34.5 kv. transmission lines, three substations, one oil circuit breaker station and one metering station in Wayne and White Counties and vicinity, Rural Line Engineers, 440 S. Brentwood Blvd. Clayton, St. Louis, 5, Mo., engrs. CD 9/27/49.

Mich., Detroit—REPAIR SHOP and MOTOR HOUSE—B.A. 9/26—Dpt. Police, George F. Boos, comr., 1 story, 44x56 ft. 10x10 ft. repair shop and motor house, Police Boat House, Belle Isle. Plans deposit $10 refundable. G. R. Thompson, City Hall, engr. CD 3/30/43.

South Carolina—RURAL DISTRIBUTION LINES—B.A. 9/26—Broad River Electric Co-operative, Gaffney, 140 mi. rural distr. lines, Cherokee, Union and Spartanburg Counties. Plans deposit $10. J. B. McCrary Eng. Corp., 22 Marietta Street Bldg., Atlanta, Ga., engrs.

California—HIGHWAY LIGHTING, etc.—B.A. 9/27—State Div. Hys., P. Wks. Bldg., Sacramento, highway lighting and traffic signal sys. near north city limits of Turlock and at Keyes Rd., Stanislaus Co. G. T. McCoy, Sacramento, state hy. engr.

N. C., Columbus—PRISON CAMP—B.A. 9/27—State Hy. & P. Wks. Comn., Raleigh, Prison Camp N. C. No. 108. Plans deposit $25 general constr.; $10 each plumbing and electrical work. T. B. Gunter, Jr., c/o owner, bridge engr.

† Arizona-Nevada—HANDRAILING, etc.—B.A. 9/28—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars at Kingman (Louise), Ariz., aluminum handrailing and steel-and-aluminum handrailing for Davis Power Plant, Davis Dam Proj. Spec. 3177. L. N. McClellan, ch. engr.

† Arizona-Nevada—GROUND WIRES—B.A. 9/28—Bureau Reclamation, Dpt. Interior, Phoenix Ariz., installing overhead ground wires on Phoenix-Tuscon No. 1, 115-kilovolt transmission line, between Phoenix and Tuscon, Davis Dam Proj., Spec. 3162.

† North Dakota—SUB-STATIONS—B.A. 9/28—Bureau Reclamation, Dpt. Interior, Bismarck, construct 15,000 kva Leeds, 1,500 kva Bisbee and 4,500 kva Rolla sub-stations, Transmission Div., Spec. R6-49 (Region 6) Missouri River Basin Proj.

North Dakota—RURAL DISTRIBUTION LINES—B.A. 9/28—Slope Electric Co-operative, New England, 194 mi. rural distr. lines, Bowman and Slope Counties. $215,000. Liteig Eng. Corp., 11141½ Front St., Fargo, engrs. CD 7/11/49.

† Ala., Ozark—FIRE ALARM SYSTEMS—B.A. On or About 10/3—U. S. Eng., P. O. Box 1169, Mobile, installing automatic fire alarm sys. in 40 misc. mobilization type bldgs. at Camp Rucker, Eng. 01-076-51-27.

Ala., Mobile—UNLOADING TOWER—B.A. 10/3—Alabama State Docks & Terminals, c/o J. B. Converse & Co., engrs., Box 1084, Mobile, Traveling Unloading Tower K. Extended date. CD 8/16.

Calif., San Francisco — PLAYGROUND — B.A. 10/3 — Recreation Comn. of City and San Francisco Co., 61 Grove St., imprv. Vasitacion Playground. Approx. $50,000. Plans deposit $10. Wm. G. Merchant, 57 Post St., San Francisco, archt. CD 11/13/47.

† North Dakota—SUBSTATIONS—B.A. 10/3—Bureau Reclamation, Dpt. Interior, Bismarck, furnishing labor, materials, performing all work for construction of Bismarck and Washburn substations, Transmission Div., Missouri River Basin Proj., Bismarck substation, approx. 1 mi. east of Bismarck, Washburn substation approx. 1 mi. north of Washburn. Spec. 3165.

South Dakota—RAILROAD RELOCATION—B.A. 10/3—U. S. Eng., 1709 Jackson St., Omaha, Neb., relocation Chicago, Milwaukee, St. Paul & Pacific R. R. Co., Stage 1, Fort Randall Reservoir Proj. Chamberlain, Serial No. CIVENG 25-066-51-25. CD 9/11.

Mass., Boston—GRAIN HANDLING FACILITIES—B. A. 10/4—Port of Boston Auth., Commonwealth Pier 5, Contr. 9, grain handling facilities East Boston Pier 1, $100,000. Extended date. Plans deposit $50. Wm. J. Donavan, 261 Park Square Bldg., engr. CD 12/30/47.

California—TRAFFIC SIGNAL SYSTEMS—B.A. 10/5—State Div. Hys., Pub. Wks. Bldg., Sacramento, traffic signal systems, highway lighting and channelization on Foothill Blvd. at Sierra and Riverside Aves. G. T. McCoy, c/o owner, engr.

Ont., Toronto—SUBWAY ESCALATORS—B.A. 11/30—Toronto Transportation Comn., 35 Yonge St., supply, installation 12 escalators at specified locations on Yonge Street Subway, Contr. SE-1. CD 1/9/46.

Tex., Houston—RADIO BLDG.—Bids Asked—Applebaum Radio Parts Co., 1422 Polk St., 2 story masonry radio bldg. $75,000. Stanley Malowitz, 4708 Caroline St., engr.

LOW BIDDERS

California—RURAL DISTRIBUTION LINES, etc.—Plumas-Sierra Rural Electric Co-operative, Portola, Aug. 25, 26.2 mi. 44-kv transmission line and 1000 kva substation, Plumas Co., from Walton-Brown Co., 236 State St., Salem, Ore., $170,337. CD 8/8.

† Calif., Oakland—PIER—U. S. Eng., 180 New Montgomery St., San Francisco, rehabilitation Pier 4 at Oakland Army Base, Spec. 04-203-51-14, from A. J. Hopper Co., 243 Langston St., San Francisco, $83,067.

Calif., San Francisco—STADIUM BLEACHERS—State Div. Architecture, P. Wks. Bldg., Sacramento, Sept. 7, stadium bleachers to seat 5,565 persons at San Francisco State College, from Barrett & Hilp, 918 Harrison St., $66,400. CD 8/23.

† Colorado—TRANSFORMERS—Bureau Reclamation, Dpt. Interior, Bldg. 1 A, Denver Federal Center, Denver, Sept. 5, Schedule 1, one 35,000 kva transformer for Pole Hill power plant, Schedule 2, one 35,000 kva transformer or alternate (2A) two 35,000 kva transformers for Flatiron power plant, Campion, from Pennsylvania Transformer Co., Cannonsburg, Pa., Schedule 1, $112,331, Schedule 2, $112,962, Schedule 2A, $225,924; f.o.b. Campion. CD 8/30.

La., Lake Charles—ARENA—McNeese State College, Lake Charles, Sept. 7, arena alterations, repairs from T. Miller & Sons, P. O. Box 921, $55,634. CD 8/31.

Missouri — MECHANICAL WORK — Northeast Missouri Electric Power Co-operative, Palmyra, Aug. 31, Sect. 9, mechanical work South River Steam Plant, from Moffett & Troop, Inc., 45 Smithfield St., Pittsburgh, Pa., $324,300. CD 8/2.

Mo., Kansas City—THEATER—City, c/o Park Bd., City Hall, Zone 6, completing Starlight Theater in Swope Park, from Universal Constr. Co., 545 Security Bldg., Zone 6, $477,300; electrical work, from Evans Electric Co., 1626 Walnut St., Zone 8, $88,474. Holland Wheeler, City Hall, Zone 6, park bd. engr.

Mo., St. Louis—RAILROAD SPUR—Wabash R.R. Co., J. C. Bousfield, ch. engr., Railway Exchange Bldg., 611 Olive St., Zone 1, 3 mi. spur big industrial development from Birmingham to Ravena Site, to Bates & Rogers Constr. Co., 600 W. Jackson St., Chicago, Ill. CD 8/9.

Nebraska — RURAL DISTRIBUTION LINES — Panhandle Rural Electric Membership Assn., Alliance, Aug. 29, 62.14 mi. rural distr. lines, Box Butte, Grant and Sheridan Counties, from Crawford Electric Co., North Platte, $156,266. CD 9/11.

North Dakota—RURAL DISTRIBUTION LINES—K E M Electric Co-operative, Linton, rejected bids Aug. 24, 525 mi. rural distr. lines, 26.43 mi. of conversion, Emmons Co., L. B. $544,583. CD 8/15.

▲ R. I., Providence—TRANSIT SHED—City, City Hall, Sept. 5, transit shed, Fields Point Municipal Wharf, from Turgeon Comstr. Co. Inc., 42 Weybossett St., $1,489,916. CD 8/31.

Tex., Houston—RADIO BLDG.—Applebaum Radio Parts Co., 1422 Polk St., 2 story masonry radio bldg. from Construction Eng. Co., 3908 S. Main St. $71,000. Est. $75,000. CD 9/5.

Va., Harrisonburg—STEAM and HOT WATER DISTRIBUTION SYSTEM—Madison College, Harrisonburg, Sept. 1, steam and hot water distr. sys. imprvs., from Frank Cline & Son, 6 E. Davie St., Raleigh, N. C., Proposal 1 $49,235, Proposal 2 $53,317. CD 8/18.

B. C., Vancouver—SPORTS STADIUM—City, City Hall, rein.-con. deck section and wooden bleacher area sports stadium, from Commonwealth Constr. Co., Ltd., 670 Taylor St., $302,688. CD 8/14.

Que., Isle Aux Grues—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf exten., from J. E. Cote, 2 Conte St., Shawingan Falls, Approx. $57,958. CD 8/15.

CONTRACTS AWARDED

† Arizona-California — TRANSFORMERS — Bureau Reclamation, Dpt. Interior, Phoenix, 6 current and 6 potential transformers for Blythe and Knob Substations, Davis Dam Proj., Spec. R3-PX-49 (Region 3), to Westinghouse Electric Corp., Luhrs Bldg., Phoenix, Ariz., f.o.b. Blythe, Calif. Bids 7/27, awarded 8/29. CD 7/14.

Fla., Hollywood—BAND SHELL—City, band shell, Young Circle, to Allen & LaCroix, 2525 Arthur St., $61,170. Bids 8/21. CD 8/16.

Fla., Sanford — ATHLETIC STADIUM — City, athletic stadium, to Jarco Corp., Orlando, $107,900. Bids 8/31. CD 8/17.

Ind., Garrett—DRIVE-IN THEATER—A. C. Kalafat, 401 S. Harrison St., 300-car drive-in motion picture theater, on 40-acre site, Rd. 8 north and west of city limits, to Theater Equipment Co., 109 Michigan St., Toledo, O., Approx. $60,000. Howard Pankratz, c/o contractor, engr.

Mass., Brookline—PLAYGROUNDS—Town, Park Comrs. Office, Town Hall, playgrounds, to Chas. Capone Constr. Co., Inc., 44 Wellsmere Rd., Roslindale, $82,227. CD 1/12/45.

† Miss., Biloxi—ELECTRICAL DISTRIBUTION SYS.—Veterans Admin., Vermont Ave. and H St. N. W., Wash., D. C., rehabilitation outside electrical distr. sys., to Southeastern Electric Constr. Co., Inc., P. O. Box 86, Andalusia, Ala., $64,707. Bids 8/15, awarded 9/6.

Nebraska—RURAL DISTRIBUTION LINES—Custer Public Power Distr., Frank Haumont, pres., Broken Bow, 569.9 mi. rural distr. lines, Buffalo, Custer, Dawson, Logan and Sherman Counties, to Line Constructors, 544 Benson Bldg., Sioux City Zone 15, Ia. $598,125 ***61.7 mi. rural distr. lines, Custer and Lincoln Counties, to Crawford Electric Co., North Platte, $164,059. Bids 8/23. CD 8/3.

Nebraska—RURAL DISTRIBUTON LINES—Niobrara Valley Electric Membership Corp., O'Neill, 580 mi. rural distr. lines, Sioux, Box Butte, Dawes, Sheridan and Cherry Counties, to J. R. Foree, Natl. Bank of Topeka Bldg., Topeka, Kan., $637,032. Bids 9/5. CD 8/11.

South Dakota—RURAL DISTRIBUTION LINES—Inter-County Rural Electric Assn., Mitchell, 110 mi. rural distr. lines, Davison Co., to Ferguson & Diehl, Jefferson, N. D., $118,885. Buell & Winter, Insurance Exchange Bldg., Sioux City, Ia., engrs. CD 5/16/49.

Texas — RURAL DISTRIBUTION LINES — Deaf Smith County Electric Co-operative, Hereford, 127.22 mi. rural distr. lines, converting 11.82 mi. line, Deaf Smith Co., to Basanda Constr. Co., Box 7008, Oklahoma City, Okla., $127,354. CD 9/8.

Texas—TRANSMISSION LINES—Lone Star Gas Co., 1915 Wood St., Dallas, distr. or transmission lines, Tarrant Co., Fort Worth area, force account. $600,000. CD 6/19.

Texas—OIL PIPE LINE—Pan-American Pipe Line Co., M. Esperson Bldg., Houston, larger pipe for 80 mi. crude oil pipe line running from near Snyder in southeast direction to near San Angelo and facilities, to Brown & Root, Box 3, Houston, $875,000.

Tex., Dallas—FREIGHT DOCK—Callan Real Estate, P. O. Box 238, Waco, freight dock. Owner builds. Approx. $95,000. CD 9/11.

Tex., Houston—GAS LINES—Ethyl Corp., City Natl Bank Bldg., design and construction gas lines, to C. F. Braun & Co., City Natl. Bank Bldg. Approx. $55,000.

Tex., Houston—UNDERGROUND CONDUITS—Southwestern Bell Telephone Co., 1121 Capitol St., addnl. underground telephone conduits for large cables, southeast sect. of county, force account. $350,000. CD 4/20/45.

Wash., Seattle—STREET LIGHTING—City, County-City Bldg., Zone 4, mercury-vapor street lighting on Airport Way from 4 Ave. S. to city limits 5 mi., day labor, $55,000. R. W. Finke, city engr.

▲ Que., Montreal—CHALET, etc.—Municipality, chalet, swimming pools, bathers pavilion and dressing rooms on St. Helen's Island, to J. P. Cartier, 2 Bellechasse St., $2,007,583. Bids 8/12. CD 8/23, under LB.

Que., St. Hubert—ELECTRICAL DISTRIBUTION, etc.—Govt. of Canada, Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, Ont., electrical distr., street lighting, fire alarm sys., to Bedard-Girard Ltd., 117 Lagauche tere, Montreal, $150,000. D. Hadekel, 1247 Guy St., Montreal, engr.

Que., Victoriaville—BROADCASTING SYSTEM—P. Brisson, 107 Notre Dame St., Victoriaville, broadcasting station, C.K.P.B. to F. Perreault, 90 Ocatve St., Victoriaville.

Proposal Advertisements see pp. 102 to 104

are businessmen

COLD-BLOODED?

OF COURSE NOT! Literally, their normal body temperature is 98.6—same as laborers, engineers or any other group of people. And, figuratively, they're no more, or no less, cold-blooded—as a group.

We all know unreasonable generalizations can be dangerously false. Common sense and on-the-job experience show us the value of dealing specifically with ideas, problems—and *people*.

Let's not make the big—and costly—mistake, then, of generalizing on religious or racial groups. Adopt and *carry out* these common sense principles:

1. Accept—or reject—people on *their individual worth.*
2. Don't listen to or spread rumors against a race or a religion.
3. Speak up, wherever we are, *against* prejudice. Work for understanding.

A PUBLIC SERVICE PROJECT ★ THE ADVERTISING COUNCIL ★

Published in the public interest by:

McGraw-Hill Publications

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 3171) will be received by Bureau of Reclamation, Casper, Wyoming, October 10, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Seminoe-Sinclair 115-kilovolt transmission line, Missouri River Basin Project, Wyoming. The work is situated near Sinclair, Wyoming. The line will be 3-phase, single-circuit, wood-pole, H-frame type, approximately 28 miles long with 2 overhead ground wires. The conductor will be either 397,500-circular mil ACSR, or 250,000-circular mil stranded copper, or 250,000-circular mil copperweld-copper. Time allowed for completion will be 210 days. For particulars, address Bureau of Reclamation, Casper, Wyoming; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (982)

OFFICIAL PROPOSALS

Bids: October 10, 1950 (984)

Heating & Ventilating Equipment

CONTRACT 425

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, October 10, 1950, for Contract 425, for furnishing, delivering, installing and testing heating and ventilating equipment for the sewage treatment plant and pumping stations of the Port Jervis sewerage system, in the City of Fort Jervis, Orange county, New York, all as set forth in the specifications.

Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of $5.00 in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, JAMES J. MORAN, Commissioners, Board of Water Supply: RICHARD H. BURKE, Secretary.

Bids: September 26 and 27, 1950 (981)

Natural Gas System

NOTICE TO CONTRACTORS

Sealed bids for the construction of a Complete Natural Gas System will be received by the following towns at their official meeting place at the day and hour mentioned:

Buford, Georgia, Tuesday, Sept. 26, 1950, 9:00 A.M.
Approximately 260,000 lineal feet of steel mains.

Jefferson, Georgia, Tuesday, Sept. 26, 1950, 7:30 P.M.
Approximately 136,000 lineal feet of steel mains.

Commerce, Georgia, Wednesday, Sept. 27, 1950, 2:00 P.M.
Approximately 224,000 lineal feet of steel mains.

Bowman, Georgia, Wednesday, Sept. 27, 1950, 7:00 P.M.
Approximately 31,000 lineal feet of steel mains.

Information, plans and bidding documents may be secured from the City Officials or from the Littrell Engineering Co., Holman Hotel, Athens, Georgia.

Bids: October 9, 1950 (985)

Rehabilitation of 102nd Street Bridge Approach

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
CONTRACT LGA-35

Sealed proposals for rehabilitation of the approach to the 102nd Street Bridge at La Guardia Airport will be received in the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2 P.M., Monday, October 9, 1950, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, September 21, 1950.

Bids: October 24, 1950 (986)

Wharf & Shed

Sealed proposals will be received by the Waterman Dock Company, Incorporated, and the Puerto Rico Transportation Authority at the Office of the General Manager of the Waterman Dock Company, Incorporated, Terminal Building, San Juan, Puerto Rico, until 11:00 A.M., Puerto Rico time, the 24th day of October, 1950, and then publicly opened, for furnishing necessary materials, labor, equipment, supplies, supervision, etc., and constructing the following described work:

Construction of a reinforced concrete marginal wharf, concrete and steel transit shed, with concrete platform, and paved street areas, for the Waterman Dock Company, Incorporated, of San Juan, Puerto Rico, and the Puerto Rico Transportation Authority.

A certified check or bank draft, payable to the Waterman Dock Company, Incorporated, or a satisfactory bid bond, executed by the bidder and acceptable sureties in an amount equal to 5% (five percent) of the bid shall be submitted with each proposal.

Specifications, proposal forms, bid and performance bond forms, contract forms and plans will be on file in the Office of the General Manager in the Terminal Building of the Waterman Dock Company, Incorporated, P. O. Box 3628, San Juan 17, Puerto Rico; and likewise will be on file with the Ewin Engineering Corporation, Consulting Engineers, P. O. Box 361, Mobile 3, Alabama, on and after September 28, 1950. Complete sets will be furnished to prospective bidders on deposit of Fifty Dollars ($50.00) which will be refunded to depositors who submit formal proposals, and return sets in good condition within Ten (10) days after the opening of bids. However, Forty Dollars ($40.00) only will be refunded to bona fide Bidders for extra sets returned and to those taking sets and not filing formal proposals.

A performance bond in an amount not less than the sum bid will be required at the signing of the Contract, and, in addition, a bond in an amount not less than fifty percent (50%) of the contract price, insuring payment for all labor and materials.

No bid will be considered unless the bidder is properly qualified to submit a proposal for this construction in accordance with the above requirements.

The right is reserved to reject any and all bids and to waive informalities.

WATERMAN DOCK COMPANY, INCORPORATED
P. O. Box 3628, San Juan 17, Puerto Rico
E. M. Thyvaert, General Manager
PUERTO RICO TRANSPORTATION AUTHORITY,
San Juan, Puerto Rico,
Salvadore V. Caro, General Manager.

Bids: October 16, 1950 (983)

Sewage Treatment Project

CITY OF ELMIRA, NEW YORK

Sealed proposals will be received by Max F. Dennis, City Manager on the 16th day of October, 1950 at 10:00 A.M., Eastern Standard Time, in the City Hall in the City of Elmira, New York, for the construction of a Sewage Treatment Project, consisting of improvements and enlargements to an existing Sewage Treatment Plant, all in accordance with plans, specifications and contract documents prepared by Nussbaumer & Clarke, Consulting Engineers for the City of Elmira. Plans and specifications are on file with the City Engineer at the Bureau of Engineering, City Hall where they may be examined. Copies may be secured from the City Engineer or from the office of the Consulting Engineers, Nussbaumer & Clarke, 327 Franklin Street, Buffalo 2, New York, on payment of $50.00 deposit for each set. Any bidder returning such copy in good condition within 30 days following the receipt of bids, will be refunded a full deposit of $50.00, and any non-bidder upon so returning such copy will be refunded $25.00.

Each proposal must be accompanied by a certified check or bid bond in the amount of 5 per cent of the amount of the bid, payable to the order of Max F. Dennis, City Manager of the City of Elmira. The bond shall be approved by the City Attorney.

Proposals shall be submitted in sealed envelopes, plainly marked on the outside: "Bid for Construction of Elmira Sewage Treatment Project".

No bidder may withdraw his bid within 30 days after the actual date of the opening thereof.

The right is reserved to reject any or all bids.

MAX F. DENNIS,
City Manager

Dated September 21, 1950

Bids: October 30, 1950 (987)

Sewage Treatment Plant

Notice is hereby given that sealed bids will be received in accordance with the law by the Ewing-Lawrence Sewerage Authority (mailing address, 156 West State Street, Trenton 8, New Jersey) until two o'clock P.M., Eastern Standard Time on the thirtieth day of October at the Lawrence Township Hall on the Trenton Princeton Road near West Church Road, for furnishing materials and performing the labor for constructing a three million eight hundred thousand (3,800,000) gallons per day rated capacity sewage treatment plant, all in accordance with the plans and specifications prepared by Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York.

Copies of the plans and specifications may be obtained either from the Authority or from the Consulting Engineers at their New York office upon deposit of Fifty ($50.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within twenty (20) days after the date on which bids are received or else the entire deposit will be forfeited.

The work to be performed is divided into four (4) sections, under which the work is classified according to its character. The principal items of work are as follows:

SECTION A — BUILDINGS AND STRUCTURES for a complete sewage treatment plant of three and eight-tenths (3.8 million gallons daily capacity, including a main building and pumping station, a garage and pumping station, two (2) primary clarifiers with sludge removal mechanisms, two (2) trickling filters with rotary distributors, two (2) secondary clarifiers with sludge removal mechanisms, two (2) sludge digestion tanks with floating covers, heating equipment, control building and heater building, four (4) glass-covered sludge drying beds, chlorine contract chamber and outfall sewer, complete with all equipment, piping and appurtenances.

SECTION B—ELECTRICAL EQUIPMENT AND WIRING for the sewage treatment plant, including switchboards, controls, power, light, gauge and metering wiring, conduit and accessories.

SECTION C—HEATING including boilers, radiators, piping, controls and accessories.

SECTION D-PLUMBING including water supply, sanitary and drain fixtures, piping, connections and appurtenances.

Each proposal must be accompanied by a certified check payable to the Ewing-Lawrence Sewerage Authority or bid bond from a reliable surety company authorized to do business in the State of New Jersey and satisfactory to the Authority, in amount equal to ten (10%) percent of the proposal. The certified checks will be retained to pay for any damage or loss to the Authority, or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

Each proposal must be accompanied by an agreement of a surety company qualified to do business in the State of New Jersey in the amount of such proposal, which agreement shall bind the surety company that if the contract be awarded the bidder it will, upon the contract being awarded, become surety for the faithful performance of said work. Said agreement shall be in writing and in the form of surety guarantee provided. The successful bidder will be required to furnish the statutory performance bond in the amount of his bid, approved as to form by the Authority counsel and as to sufficiency by the Authority.

The Authority reserves the right to consider bids for thirty (30) days after their receipt before awarding any contract and the right is reserved to accept any bid or to reject any or all of them.

EWING-LAWRENCE SEWERAGE AUTHORITY
H. Collin Minton, Jr. (Chairman)
Wilson O. Bachman (Vice Chairman)
Garret S. Boetsma (Treasurer)
Wilfred F. Predhome (Secretary)
Harry E. Case
John G. Brady
Buck, Seifert and Jost
Consulting Engineers

(Continued on page 104)

U. S. Government
(Continued from page 103)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 3180) will be received by Bureau of Reclamation, Grand Junction, Colorado, October 5, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of 6 concrete flumes, Highline Canal, Grand Valley Project, Colorado. The work is situated near Grand Junction, Colorado. Principal items are approximately: excavation, 7,700 cu. yds.; concrete, 1,700 cu. yds.; riprap and gravel blankets, 2,500 cu. yds.; and other work. The work is divided into 3 schedules. Time allowed for completion, to permit canal operation, will be 160 days. For particulars, address Bureau of Reclamation, Grand Junction, Colorado; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(980)

NORTH PLATTE PROJECT, WYOMING-NEBRASKA DESIGN SECTION, CASPER, WYOMING

August 30, 1950, UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN THAT sealed bids on Specifications No. R7-149 will be received at P. O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, September 21, 1950, and then publicly opened, for furnishing labor and materials and performing all work for the partial reconstruction of timber bridge across the North Platte River at Whalen, Wyoming, North Platte Project, Wyoming-Nebraska. The work is situated approximately 7 miles northwest of Fort Laramie, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, 318 New Customhouse, Denver 2, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $0.25 per copy not returnable.
(979)

OFFICIAL PROPOSALS

Bids: October 24, 1950 (978)

Refuse Disposal Plant

TOWN OF OYSTER BAY
NOTICE TO CONTRACTORS

Sealed bids for the construction of All Divisions of a Refuse Disposal Plant Project for the Town of Oyster Bay, in the vicinity of Syosset, Nassau County, New York, will be received by the Town Board at the office of the Town Board, Town Hall, Oyster Bay, New York until 10:30 A.M. o'clock, Eastern Standard Time, October 24th, 1950, and will then be publicly opened and read aloud at a meeting of the Town Board of the Town of Oyster Bay, N. Y.

The Information for Bidders, Form of Bid, Form of Contract, Form of Performance Bond, General Conditions, Specifications, and the Contract Drawings, may be examined at the office of the Town Clerk, Town Hall, Oyster Bay, New York, or at the offices of the Consulting Engineer, Henry W. Taylor, 11 Park Place, New York 7, N. Y., and copies thereof can be obtained upon payment of a deposit of Twenty-Five Dollars ($25.00) for each set. A refund of Ten Dollars ($10.00) will be made for each set to each bidder or non-bidder upon return of such set in good condition within ten (10) days after the receipt of bids.

Checks for deposits on Plans and Specifications shall be made payable to the Town of Oyster Bay, N. Y.

The Town of Oyster Bay reserves the right to waive any informalities and to accept any bid or to reject any or all bids.

Each bidder must deposit with his bid cash or a certified check in an amount of not less than five percentum (5%) of the base bid, made payable to the Town of Oyster Bay, N. Y.

No bidder may withdraw his bid after acceptance thereof by the Town of Oyster Bay, or within forty-five (45) days after the actual date of the opening thereof.

TOWN OF OYSTER BAY,
NEW YORK,
BY: LESLIE C. DISBROW
Town Clerk

Dated September 7th, 1950.

OFFICIAL PROPOSALS

Bids: September 25, 1950 (976)

Furnishing and Delivering Asbestos Cement Water Pressure Pipe

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 843-W

Sealed proposals for furnishing and delivering twenty-five-thousand (25,000) ft. of 6-inch; twenty-five-thousand ($25,000) ft. 8-inch; twelve-thousand (12,000) ft. 10-inch and ten-thousand (10,000) ft. 12" Asbestos Cement Water Pressure Pipe—Class 150 will be received in the office of the Purchasing Agent, Room 3, of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland until 2:00 P.M., Eastern Standard Time, Monday, September 25, 1950 at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt, Chairman
Warren Browning
Leland G. Worthington
Commissioners

Bids: September 25, 1950 (977)

Furnishing and Delivering "AWWA" Cast Iron Water Pipe Fittings

WASHINGTON SUBURBAN SANITARY COMMISSION

Sealed proposals for furnishing and delivering three-hundred (300) tons of "AWWA" Cast Iron Water Pipe Fittings will be received in the office of the Purchasing Agent, Room 3, of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland until 10:30 A.M., Eastern Standard Time, Monday, September 25th, 1950 at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt, Chairman
Warren Browning
Leland G. Worthington
Commissioners

(974)

New Jersey Turnpike Authority

* * *

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 62

The work to be performed under this Contract involves the construction of pavement for two (2) interchanges, pavement for the turnpike highway, and pavement for thirty-four (34) cross roads, and work appurtenant thereto on Section 4 of the New Jersey Turnpike between Alleutown and the Raritan River in Mercer and Middlesex Counties, New Jersey.

Principal items of work include:

10-inch Portland Cement Concrete Pavement with 6 inches of Special Subbase, or 4½-inch Asphaltic Concrete Pavement with 8 inch Macadam Base and 6-inch Subbase, 792,000 sq. yds.; Bridge Approach Slabs, 7,400 sq. yds.; 4-inch Topsoil, 500,000 sq. yds.; Concrete Gutter, 11,000 sq. yds.; Shoulders, Type "F", "G" or "H", Alternate types, 450,000 sq. yds.; Storm Drain Reinforced Concrete or Cement Asbestos Pipe, 15 inch Diameter, 35,000 lin. ft.; Type D-1 and D-2 Inlets, 1,000 each; 8-inch Reinforced Concrete Pavement for Cross Roads, 18,000 sq. yds.; Macadam Base Course for Cross Roads, 105,000 sq. Yds.; 6-inch Gravel Shoulder, Surface or Base Course, 28,000 sq. yds.; Guard Rail for Cross Roads, 45,000 lin. ft.

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock on the morning of October 11, 1950 and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

OFFICIAL PROPOSALS

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment. Contract documents may be seen, and may be inspected by prospective bidders during office hours, on and after September 14, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Engineers, De Leuw, Cather and Company, 106 Mercer Street, Hightstown, New Jersey.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) percent of the amount of the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the above place on or before the hour named. Copies of the proposal form to be used for submitting proposals, of form of proposal bond, of the form to be used for financial statement and plan and equipment statement to be submitted with proposal, and special addressed envelopes are furnished in detached form with the Contract documents.

The Contract will be awarded or proposals rejected on or before December 1, 1950. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

September 12, 1950

Bids: November 2, 1950 (975)

Pumping Station

OFFICE OF CITY PURCHASING AGENT
NASHVILLE, TENNESSEE

Sealed bids will be received by the Purchasing Agent of the City of Nashville, Tennessee, at the office of the Purchasing Agent, until 10:00 A.M., Central Standard Time, Thursday, November 2, 1950, for Electrification of the George Reyer Pumping Station, including Removal of Allis-Chalmers Crank and Flywheel Pump; Furnishing and Erecting 40 MGD High and Low Service Motor Driven Centrifugal Pumps, Complete with Piping, Valves and Accessories; the Motorizing of the Three Existing Steam Turbine Driven DeLaval Centrifugal Pumps, together with Appurtenances for same; and the Furnishing and Erection of Electrical Control Equipment and Accessories, according to plans and specifications which are on file in the office of the Director of the Nashville Waterworks Department, Room 201 City Hall, Nashville, Tennessee, and also the office of The Chester Engineers, 210 East Park Way, Pittsburgh 12, Pennsylvania. Immediately after closing time for the receipt of bids they will be publicly opened and read aloud in the office of the Purchasing Agent, City Hall.

The successful bidder will be required to furnish a satisfactory performance bond.

All bids shall be made upon the blank forms of the contract documents. Copies of all contract documents, including Proposal Form, Contract Plans and Specifications and Instructions to Bidders may be obtained at the office of The Chester Engineers by depositing Twenty-five Dollars ($25.00) for each set of documents so obtained. The entire deposit will be refunded to each actual bidder and Fifteen Dollars ($15.00) will be returned to all others who return plans and specifications in good condition within ten (10) days after opening of bids.

The right is reserved by the City of Nashville, through its Mayor, to reject any and all bids, to waive any informalities in the bids received, and to accept any bid which, in its opinion, may be for the best interest of the City.

A certified check or bank draft, payable to the City of Nashville, or a satisfactory bid bond executed by the bidder and a surety company authorized to transact business in the State of Tennessee, in an amount equal to Five Per Cent (5%) of the bid, shall be submitted with each bid.

No bid may be withdrawn after the scheduled time for the receipt of bids.

CITY OF NASHVILLE, TENNESSEE
E. B. SMITH
Purchasing Agent

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.
DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by September 25th at the New York Office 330 W. 42 St., N. Y. 18, will appear in Oct. 5th issue subject to space available.

ESTIMATOR or COST ENGINEER

wanted for work in Brazil Age 28 to 40. By North American Company which has been building hydro-electric projects in Brazil for past 50 years. First class engineering and construction organization with good opportunities for future. Salary to suit qualifications. In reply state experience and personal status in detail. Reply to

Dept. WHK
Canadian Brazilian Services, Ltd.
Yonge & Gerrard Sts.
Toronto, Ontario, Canada

ELECTRICAL ENGINEERS

Graduates, experienced in design engineering and economic studies of steam-electric power plants and high voltage substations. Also, knowledge of power system relaying and preparation of specifications for switchboards and switchgear.

P-7541, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED
For Large Construction Project

Northern Chile, 9200 feet elevation
Moderate Climate, Eighteen months contract
Proven experience and references
Rigid physical requirements
CONCRETE AND CARPENTER
STRUCTURAL STEEL, WELDING AND AREA SUPERINTENDENTS
CARPENTER, CEMENT FINISHING
CONCRETE PLACING, PIPE, MILLWRIGHT and AGGREGATE-BATCH PLANT FOREMEN
DRAFTSMEN-ESTIMATOR, CHIEF of PARTY
LAY-OUT, COST and
CONCRETE CONTROL ENGINEERS
HEAVY DUTY SHOP and
FIELD FOREMEN, DIESEL MECHANICS and CRANE OPERATORS on STRUCTURAL STEEL

P-7737, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

ESTIMATOR

Construction Engineer 35 or over experienced quantity surveyor and building expediter, wanted by progressive contracting firm doing Schools, Hospitals, Public Buildings, Industrial and Commercial Buildings.

Give full information, experience record and salary expected.

GEO. SHEAF & CO.
449 Neilston St. Columbus, Ohio

SALES ENGINEER

National concrete specialty subcontractor desires outstanding man, knowledge concrete, ability to sell, handle construction projects, travel; salary, plus commission later; age, education, health, experience, salary earned and required.

SW, 7721 Engineering News Record
330 W. 42 St., New York 18, N. Y.

ENGINEERS *Wanted*
Civil—Electrical—Mechanical—Structural

Apply KAISER ENGINEERS
Division of Kaiser Industries, Inc.
1924 Broadway Oakland, California

BRIDGE DESIGNER

Bridge Designer, $4500.-$5700. Graduate Civil Engineer, five years experience bridge design. Examination open citizens of U. S. Write Division "E", N. J. Dept. Civil Service, State House, Trenton. Closing date for applications September 28, 1950.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED, SEVERAL engineering graduates under 35, by large industrial fire prevention organization for field work involving periodic inspections and special consulting service. Electrical and Chemical engineers preferred. Permanent. Openings in United States and Canada. P-7287, Engineering News-Record.

CONSTRUCTION COMPANY, operating nationwide, specializing in structural concrete, such as bridge piers and their foundations and mass concrete such as dams, require A No. 1 thoroughly experienced estimator familiar with present-day costs capable of preparing comprehensive and complete estimates. To be considered, complete information must be furnished. Our organization has been advised of this advertisement. P-6974, Engineering News-Record.

WANTED: HIGH-Class Draftsmen, structural and industrial. Also, experienced structural designers in steel or reinforced concrete. Also, concrete detailers. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

INSPECTORS OR Engineering Aids for Field and laboratory; experienced in field control of asphalt, concrete, and soils. Give age, qualifications and salary desired. Toledo Testing Laboratory, Toledo, Ohio.

STRUCTURAL STEEL Detail Draftsmen and Checkers. Must be experienced. All type structures. Send complete written information. Samborn Steketee and Associates, 1214 Cherry St., Toledo 2, Ohio.

ROAD ENGINEER Wanted—Registered, with construction experience, also drafting and specifications. References. Modoc County Board of Supervisors, Post Office Box 177, Alturas, California.

ESTIMATOR, EXPERIENCED with commercial, industrial and public building work. Give history record and salary expected in first letter. Kuhn Construction Company, Kanawha Valley Building, Charleston, West Virginia.

(Continued on the following page)

SALES ENGINEER
ENGINEERING and CONSTRUCTION

Large industrial engineering and building firm has opening in Eastern Office for qualified Sales Engineer with contacts and recent experience in selling engineering and construction services.

Submit complete information stating experience, education, personal contacts, references, date available and salary requirement. All replies will be treated confidential.

P-7642, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

ESTIMATOR

Experienced ENGINEER, familiar with Oil Refinery design and capable of estimating process equipment from flow diagrams.

Give full information, experience record and salary expected.

ARTHUR G. McKEE & CO.
2300 CHESTER AVE.
CLEVELAND 1, OHIO

GENERAL SUPERINTENDENT
ESTIMATOR

Two men, age 30-50, presently employed who wish to improve position, wanted by contractor located in Central New York State performing heavy construction in Eastern States. Must be familiar with bridge, dam and earth work. Mail complete details.

P-7659, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

CITY OF DETROIT

Engineers experienced in the design and construction of water works needed for $28,000,000 project. Starting salary $4,067; $4,809; $5,580; $6,450 per year with annual increases. Submit resume of experience with application request.

Detroit Civil Service Commission
1301 Water Board Bldg.
735 Randolph Street, Detroit 26, Mich.

A COURSE OF INSTRUCTION BY MAIL IN
STRUCTURAL ENGINEERING
Fortieth Year
OUR COURSES HAVE HELPED THOUSANDS
to better positions and to pass State Board Examinations
- Complete Structural Engineering Course.
- Public Works Structures.
- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION
College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

POSITIONS VACANT
(Continued from preceding page)

LARGE MIDWESTERN Nationally Operating Contractor has openings in their organization and on their projects for several First-Class foremen and superintendents on highway construction in East and West. Also opening for first-class bridge constructing foreman or superintendent. P-7641, Engineering News-Record.

CIVIL ENGINEER with field and office experience to write architectural and civil specifications for building projects. Secure position with large organization. Salary commensurate with ability. Sverdrup & Parcel, Inc., 1118 Syndicate Trust Bldg., St. Louis 1, Missouri.

MACHINIST-SUPERVISORY with automotive experience to take charge of engine rebuilding machine shop. Familiar with special purpose automotive engine reconditioning equipment with experience in training operators and supervision a definite essential. Permanent well paying position, limited only by individual effort and ambition of successful applicant. Give resume of experience, training and age. Write or telephone George P. Henderson, Auto Gear & Parts Company, 16th & Hunting Park Ave., Philadelphia, Pa. DA 4-8000.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

CONTROLLER-OFFICE Manager Heavy construction contractor. Accounting, Systems, Costs, Taxes, Insurance, Payrolls, Main, subsidiary and Joint Venture accounts. 15 years complete charge. Handled 20 million dollar a year volume. College Grad. Will relocate. PW-7547, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, heavy grading projects, earthfill dams, highways, airports, flood control, incidental concrete. Thorough knowledge of equipment and maintenance. Can estimate for bidding purposes aforementioned work. Handle any size project from beginning to end. References and projects built over past 18 years furnished. PW-7596, Engineering News-Record.

MANAGEMENT ENGINEER: Analysis of financial and manufacturing company reports, supervision over special situation, highly technical operations, plant improvements and extensions, development exports-imports. PW-7639, Engineering News-Record.

AVAILABLE: CONSTRUCTION Executive, over thirty years building and heavy construction. Field supervision, purchasing, negotiating, estimating and all other details of contracting. Top man seeking new connection where scope will permit full use of ability. PW-7368, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT
THOROUGHLY EXPERIENCED
Hospitals, housing, industrial bldgs, sewers, roads and bridges. Req. Engr. Member ASCE. Prefer Ohio or Midwest location.

PW-7716, Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

CONSTRUCTION MANAGER AVAILABLE
Experienced general construction man seeks General Contractor requiring services of a Construction Manager for large projects or joint ventures. Foreign or domestic. Highest references.

PW-7540, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS WANTED

CONSTRUCTION MGR. Gen'l Supt. Exp. includes all details of entire heavy and light bldg. and allied constr. 20 yrs. exp. Salary $175.00/week. PW-7763, Engineering News-Record.

GENERAL SUPERINTENDENT and Engineer 27 years experience in complete charge of dirt moving sewers, highways, tunnels, and foundations available immediately. PW-7668, Engineering News-Record.

BUILDING CONSTRUCTION Engineer — 30 years experience. Thoroughly understands estimating, pricing, subletting and office work. Desires position of responsibility. PW-7689, Engineering News-Record.

DESIGN ENGINEER, doctors degree, top stress analyst, steel and reinforced concrete, vast experience with bridges, buildings, hydraulic structures, at present chief draftsman in bridge office, seeks position that offers wider field of activity and commensurate endowment. PW-7705, Engineering News-Record.

CIVIL ENGINEER, 27 years structural steel design and fabrication experience. Available for responsible position PW-7690, Engineering News-Record.

METER SUPERINTENDENT: Twenty-three years experience all details modern water meter maintenance. Large shop operations, field testing of large meters etc. Present shop servicing 25000 meters. Best references. PW-7694, Engineering News-Record.

ENGINEER DESIRES connection with growing concern offering opportunity for advancement. Twenty years office and field experience in planning, estimating and engineering for construction of buildings, streets, highways, railroads, oil lines, pipes, sewage, water and power facilities, land surveying and mapping. PW-7747, Engineering News-Record.

OFFICE MANAGER, Accountant Auditor, now employed, desires foreign contract—16 years diversified experience in heavy, refinery and housing construction. All phases of general and cost accounting, payroll and timekeeping. PW-7693, Engineering News-Record.

RESIDENT ENGINEER, or Inspector, available early November. Thirty years experience heavy construction; railroads, river bridges, highways, mining facilities, industrial plants. Will retire in about ten years. Good health and good record. Location desired in Florida or Texas. PW-7759, Engineering News-Record.

ESTIMATOR-HIGHLY skilled all types construction and all trades. Desires free-lance work. Quantity takeoffs and pricing. Will call for plans. N. Y. vicinity. PW-7757, Engineering News-Record.

PART TIME WORK WANTED

STRUCTURAL DESIGNER, licensed P.E., 25 years experience bridges, industrial buildings, miscellaneous structures, wants free lance work design, layout, investigation and estimates. PTWW-7075, Engineering News-Record.

WORK WANTED

Engineering Staff
specializing in reinforced concrete structures. Registered N. Y. State. Will handle subcontracts, space and competent staff available. Location N. Y. C. WW-7741, Engineering News-Record.

SUBMERGED PIPE LINE CONSTRUCTION
BOYCE COMPANY
Phone 3-2530 Clearwater, Fla.

Building Construction Cost Data
1950 (8th) Edition
A 92-page booklet of tabulated construction costs revised as of January 1950. 1500 items alphabetically arranged and broken down for labor and material. Concise, Comprehensive, *Up-to-date*, Handy. $2.50 Postpaid.
R. S. MEANS
P. O. Box 62N Duxbury, Mass.

ESTIMATING SERVICE
Any Trade and Type of Project
Literature and Sample on request
Construction Survey Cooperative
101 Park Ave., New York 17, N. Y.
MUrray Hill 5-7317 Founded 1922

FOR RENT OR SALE
Cat'p'lar D-7 in 3T series, fully rebuilt w/all new tracks, etc., hydr. bulldozer, selfstarter, canopy
Lorain 80 Diesel 1¾ cy shovel
Northwest 4 gas 1 cy 60' Crane
INSLEY Model "K" Truck Crane, 28' boom
Cat'p'lar D-6 with Link Belt Crane
Cat'p'lar D-4 Hydr. Bulldozer. Late Model
BENDIX MACHINERY CO., INC.
401 Broadway New York 13
Tel: Canal 6-5693

Our Craftsmen do
INSTRUMENT REPAIR AND OVERHAUL

- Complete department—handles all makes.
- Experienced craftsmen do all work.
- Includes thorough overhaul, cleaning, oiling and adjustment.
- Precision work guaranteed.

DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12, Wis.

INSTRUMENTS FOR RENT
We rent transits and levels on a monthly or yearly basis. Reasonable rates. All instruments are fully guaranteed in first class working order.
DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12, Wis.

FOR SALE
Zeiss 'Dahlta' Topographic Transit, reduces stadia readings to horizontal, diff. in elev. without computation, hz. angles to 0.1'. Accessories. Practically new. $800.—

Zeiss 'B' precise level, tilting micrometer, split image bubble. $350.—

Zeiss 'M' Theodolite, coincidence micrometer to 1", optical plummet. $900.—

J. SCHEITHE
319 W. North St. Lima, Ohio

NO INFLATION HERE!

SELECTIONS

FROM OUR STOCK

Pump Crete #190 Electric. $3000.
Pump Crete #190 Gasoline. $3250.
(Some 7" Pipe available—Extra)
One yard Stationary Mixer. 25 HP. Electric Motor—Loading Skip—$1500.
C.M.C. 10-S Mixer—4 pneumatic wheels—"Fair"—$400.
International TD-14 Tractor. Power Control Unit and 6 yard Scraper Wagon—$6500.
Scraper Wagon—8-10 yards with D.D. P.C.U.—$3000.
Adams #511 Power Grader-Diesel-Tandem—$4500.
Cat. R-4 Tractor with Pipe Layer Boom and Angledozer—$4600.
Buckeye Double Drum Power Control Unit—$400.
International UD-6 Diesel Engine (40 HP) $850.
Hough "HLD" Payloader Diesel—1 yard $4500.
Tournapull—"Super C" with L. P. Scraper $7000.
Thomas 50 HP Double Drum Electric Hoist $1800.
O. & S. 40 HP Single Drum Electric Hoist $1000.
Lidgerwood 30 HP S.D. Hoist—$1250.
Sauermann 30 HP Scraper Hoist and ½ yard Crescent Scraper. $1000.
Swinger Attachment for 50-75-HP Hoist $700.
Front End Loader—Case R. T. Tractor $1800.
Sasgen 2 Ton Stiff Leg Derrick Double Drum—hand winch—$400.
Hyster Karry Krane—Pneumatic Tires—$2500.
Bay City ¾ yard—10 Ton Crawler Crane—$7500.
Bay City ½ yard Shovel "As is" $2500.
Austin-Western Badger Crane with ⅜ yard Clamshell—$8000.
Jaeger AJS Stone Spreaders—$250.
Jaeger Road Form Tamper—$200.
Jaeger 6" Self Priming Pump—$650.
Lawrence 6" Centrifugal Pump—40 HP Motor $600.
C.H. & E. Triplex High Pressure Pump. Gas Power—4 Steel Wheels $400.
Ingersol-Rand Pneumatic Sump Pumps—$175.
Chicago Pneumatic High Head Sump Pumps $200.
Buda Earth Auger—20' Folding Tower for truck mounting—$1000.
Buffalo-Springfield 5 Ton 3 wheel Roller $600.
Buffalo-Springfield 5-7 Ton Tandem Roller $2500.
Single Drum Sheepsfoot Roller—$750.
Gardner Denver Wagon Drill on Pneumatics—with Drifter—$1000.
Hayward 1½ yard Orange Peel Bucket $750.
Gardner-Denver Sheeting Drivers $200.
Worthington Wagon Drill, no Drifter $500.

RENTAL SERVICE CO.

4th & Courtland Sts., Philadelphia-40-Pa. Tel. Gladstone 5-4200

SALES *34 YEARS OF "SERVICE"* *RENTALS*

FOR SALE

30 Ton Electric Gantry Crane
60 Ton Per Hour Asphalt Plant
3-W Monagahan Dragline, Diesel Electric
100 Ton Capacity Derrick Scow
900-500-315 Ft. Air Compressors
Lorain Dragline Model L-820
25 to 50 Ton Whirleys, Steam Power
5 Compt. Bin and Concrete Plant
Wide Gauge, all electric, 2 Yd. Crane
6 7 8 Yd. Walker Type Draglines
Locomotive Cranes, Steam, Gas, Diesel Power
25 Ton Manitowoc Model 3000-B
10 Ton Truck Crane Tandem Drive
150 Ton 3 Compt. Bin Batcher Scale

"STONE THE CRANE MAN"
1132 Prudential Bldg. Buffalo 2, N. Y.

FOR SALE

1—N. W. SHOVEL

¾ c.y. Model 25
Optional as Crane or Backhoe

WILLIAMS CONSTRUCTION CO.
Box 145 Middle River, Baltimore 20, Md.
Phone—Essex 1310

FOR SALE

1—Northwest Model 41 Shovel Attachment 1 C.Y. Yard Complete

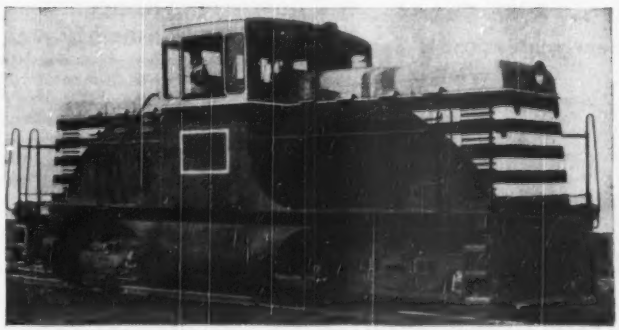
GARGARO COMPANY, Contractors
40 E. Seven Mile Rd., Detroit 3, Michigan

SALE OR RENT
EXCELLENT CONDITION

2—Caterpillar D8 Dozers.
1—Caterpillar D7 Dozer.
1—Bucyrus Erie 2½ C.Y.

N. A. FINN COMPANY
369 Lexington Ave. N. Y. C.
LExington 2-3868

G.E. 44 TON DIESEL ELECTRIC LOCOMOTIVES



1 STANDARD GAUGE—1 NARROW GAUGE

1—75 Ton Steam Switching Locomotive Completely Overhauled

Priced for a Quick Sale

WRITE or WIRE

FS-7673, ENGINEERING NEWS-RECORD
330 West 42nd St., New York 18, N. Y.

CRANES - HOES SHOVELS

ALLIS-CHALMERS, Model HD-5 TRACTO SHOVEL. Mfg. in 1948. In good condition.

BUCYRUS-ERIE, Model TD-9 DOZER Shovel with gravity bucket, backfiller blade. Mfg. in 1945. In operating condition.

CASE Model SI Wheel TRACTOR, with HOUGH front end loader, gravity dump bucket. Cleaned and painted. Mfg. in 1948. In good condition.

HOUGH, Model HLD Payloader, hyd. bucket control and backfiller blade. New in 1947. In excellent condition.

HOUGH, Model HLD Payloader, with gravity dump bucket. Mfg. in 1946. In good condition.

LORAIN, Model L-40 Truck Crane, powered by Waukesha gas engine, with starter, 25' crane boom, mounted on 4 x 4 AC MACK with dual 12:00 x 24 rear and single 9:75 x 24 front tires. In good condition.

LORAIN, Model 77, 1½ yard shovel on crawlers, caterpillar D 13000 DIESEL engine, crane boom. In operating condition.

P. & H., Model 600, 1¼ yard crawler shovel, powered by Waukesha gas engine, with starter. In operating condition.

Write, wire or phone

EHRBAR

Brooklyn, N.Y.—Evergreen 3-5000
Union, N. J. — Unionville 2-7400
Westbury, L. I.—Westbury 7-1900

• STRUCTURAL STEEL SHAPES •

New and Used—Immediate Delivery

At present our inventory of steel shapes and forms includes a full line of both new and used steel especially for heavy construction work. 4" I beam to 36" Girder Beam. 14" Columns 287#/398#

BEARING PILE SECTION

Stock list on request. Write, wire or phone.

HY DRACHMAN STEEL CORPORATION

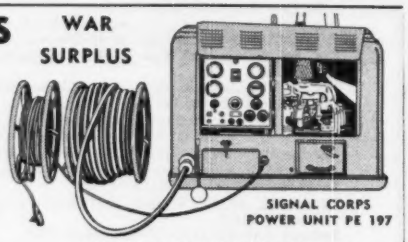
Warehouse
14-23 34th Ave., Astoria L. I., N. Y.
Astoria 8-8023; 8-4484-5

Sales Office
563 E. Tremont Ave., New York City, N. Y.
Cypress 9-5440-1

LIGHT PLANTS

Brand New!

WAR SURPLUS



115 volt 60 cycle A.C. single phase 5 K.W. Hobart, water cooled, 14 h.p. 4 cylinder Hercules Engine. **Remote Control**, complete panel board with instruments. 150 ft. automatic remote control cable with reel; 150 feet #6 heavy duty wire with reel; housed in metal case with replacement parts and tools. Cable with reels alone worth $400. Regular price of unit $1900.00. Shipping wt. 1250 lbs. Our price, complete **$895.00** f.o.b. Chicago

Also 2½ K. W. power plant **$295.00**

WRITE FOR ILLUSTRATED FOLDER

SIGNAL CORPS POWER UNIT PE 197

WELLWORTH TRADING CO.
1831 S. State St. DEPT. ENR-9 Chicago, 16, Ill.

FOR SALE OR RENT

2 15T Browning Truck Cranes 1947
4 DW 10s-Scraper and Tractor 1949
5 D-8 Tractors 1947-1950
1 604 Lima Shovel and Backhoe, late 1948
1 Blaw Knox Cement Bin 200 bbl.
1 Blaw Knox Agreometer Bin 200 ton
1 General Shovel backhoe—1948
1 12 Caterpillar Grader 1950
1 Galion Grader 1950

John B. Schultz Contr. Co. Inc.
316 Crestwood Ave., Buffalo 16, N.Y.
'Phone Delaware 8011.

FOR SALE:

2—CATERPILLAR D-4's with La Plante Choate Hydraulic Angle Blade. Excellent condition.
2—CATERPILLAR D-7's with La Plante Choate Hydraulic Angle Blade. Excellent condition.

PIONEER CONSTRUCTION CO.
WEST END NAT'L BANK BLDG.
Second & Walnut Sts., Shamokin, Penna.

PIPE

FOR SALE

Bearing Piles and H-Beams

8" x 36#	40'
10" x 42#	40'
10" x 49#	40'
12" x 53#	40'
12" x 65#	40'

Plates — from 3/16" to 1"

WRITE WIRE CALL

QUEENSBORO STEEL CORPORATION
47-29 Van Dam Street
Long Island City 1, N. Y.
Stillwell 4-2720

FOR SALE

27E Ransome Paver

full caterpillars with boom and bucket

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

FOR SALE

Lorain ½ yard motor crane.
Bay City ¾ yard motor crane,
overhauled and in good condition.
D-17000 power unit.

A. M. FORTE
9 No. Church St. Schenectady, N. Y. Ph. 4-9775

EST. 1904

DAVIDSON

PIPE COMPANY INC.
FORMERLY
ALBERT & DAVIDSON PIPE CORP.

ONE OF THE LARGEST STOCKS IN THE EAST
Seamless and Welded ⅛" to 26" O.D.
All wall thickness Manufactured.
Specialty large sizes.
Cutting — Threading — Flanging — Fittings — Valves.

Call GEdney 9-6300
50th St. & 2nd Ave., B'klyn 32, N. Y.

FOR QUICK SALE

5—Super-C Turnapulls with L. P. Scrapers, 13 cu. yd.
2—Super-C Turnapulls with 210AW Tournatrailers
1—210AW Tournatrailer unit only

Location—Eastern Pennsylvania. Generally good condition. Offered at very attractive prices.

FS-7702, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

FOR SALE

LOCOMOTIVE CRANE

25 Ton Diesel 1941 Model Industrial Brownhoist, magnet generator equipment, 50' boom, D-13000 engine.

GEORGE M. MERIWETHER INDUSTRIAL EQUIPMENT
BIRMINGHAM, ALABAMA

NW 25 crane ser. #5530, 35 ft. boom, fatrileads, wide treads, Cummins diesel engine. Good condition—$8000.00
R-4 cat tractor W/angledozer & Hyster logging winch. Excellent condition—$3000.00
Cat DW-10 tractor W/LaPlante-Choate scraper. Good condition, good rubber—$2500.00

AMERICAN CONSTRUCTION CO.
R. F. D. 4
Columbia, South Carolina

PIPE AND ACCESSORIES

IF IT'S MADE, WE HAVE IT!

Seamless and Welded—Every Size and Wall Thickness—Cast and Wrought Iron, Steel, Alloys

POWER PIPE FABRICATING
Bending, Coiling, Flanging, Threading, Beveling, Lining, etc.

Valves & Fittings
Piling & Fittings
Culverts

SPEED-LAY PIPE SYSTEMS
Write for brochure

ALBERT
PIPE SUPPLY CO., INC.
Berry at North 13th St.
Brooklyn 11, N. Y.
Phone EVergreen 7-8100

FOR SALE

Lorain 820 Shovel, Marion 362 Combination, 80-D Northwest Shovel, Northwest Model 6 Backhoe, Buckeye ¾ Yd. Shovel, Lorain Model 80 1¼ Yd. Shovel, Lorain Model 41 Shovel, Osgood Model 200 ½ Yd. Comb., Bucyrus Models 15-B and 22-B Cranes. 5—D8's dozers in 2U series. 5—HD19's dozers, International TD24, TD18, TD9, TD6 dozers, Parsons 310 Diesel Trenchliner, Buckeye C-15, C-10, C-20, 401, 410, 110, 95, P & H Trencher Model 1030, Austin 105, Model 16-S Truck mounted, Garwood 17 Yd. Model 515 Scraper, Bucyrus-Erie 18 Yd. Model 512 Scraper, Bucyrus-Erie 8 to 10 Yd. Model S-67 Scraper, Diesel heavy tandem Warco Motor Grader, International 1-6 Bulldozer with rubber tires, Nova Paving Breaker mounted on White Truck, Clamshell and Dragline Bucket—all sizes, Northwest Shovel Fronts Model 2, 25, 6 and 80-D, Marion 362 Shovel Front, Buckeye ¾ Yd. Shovel Front Model 70, Link Belt Model LS-40 Front, Lima 1201, 802, Manitowoc Shovel Front Models 3500 Std. and Model 3000 Std. Lorain Shovel Front Model 30 1½ Yd. P & H Shovel Front Model 400, Osgood 1½ Yd. Front, Lorain 620 Shovel Front, 10—DW10's with LaPlant Choate Scrapers, 5—LeTourneau Super C Tournapulls, 5—Woodridge Terra Cobra Prime Movers, Backhoe Attachments for P & H 255, Osgood Model 200, Insley Model K-12 and Bay City Model 45, Fairleads for Osgood 200, Insley K-12 and Bucyrus-Erie B22, Crane Booms for Northwest #8, Insley, Osgood and Lorain #820 and 80.

AIR COMPRESSOR RENTAL CO.
19615 Nottingham Road Cleveland, Ohio
Kenmore 1-8000

FOR SALE—SHEETING

400 16 ft. pieces of Armco black steel flange type sheeting with pulling holes and 4 driving heads. Price—$3500.

NANCE & VIVADELLI CO.
2420 WILSON BLVD. ARLINGTON, VA.

RAILS-TIES
TRACK ACCESSORIES

Need RAILS?

You'll get them "Faster From Foster"

Largest stocks in U.S. NEW & RELAYING RAILS
Track Tools and Accessories

Foster guarantees material satisfactory or returnable freight both ways, our expense.

✔PIPE ✔ PILING ✔ WIRE ROPE & SLINGS

L.B. FOSTER CO.
Pittsburgh 30, Pa. New York 7, N.Y.
Chicago 4, Ill. Houston 2, Tex.

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK
480 Lexington Ave. Park Bldg.
New York, N. Y. Pittsburgh, Pa.
Reno, Nevada Carnegie, Pa.

TRACK SPIKES

150 kegs New 9/16 x 5½
Rails — New 20 to 25#; Relay 56 to 110#

W. H. DYER CO., INC.
1859-X Railway Exchange Bldg., St. Louis, Mo.

GOOD EQUIPMENT

AUSTIN-WESTERN, Model 55, GRADER, with scarifier, 8' hyd. operated moldboard. Built in 1949. In very good condition.

BARBER-GREENE, Model 82A BUCKET LOADER, powered by HERCULES gas engine, no starter, mounted on crawlers. Mfg. in 1940. In fair condition.

BUCYRUS-ERIE, Model B-170 SCRAPER, four 21:00 x 25, 20 ply, pneu. tires, flat cutting edge, new bowl. Mfg. in 1949. In excellent condition.

CATERPILLAR, Model 11, AUTO PATROL GRADER, DIESEL engine, tandem rear wheels, leaning front wheels, scarifier, 12' blade, lights, no starter. In good condition.

INTERNATIONAL-HARVESTER, Model UD-24 POWER UNIT with long skid base, fuel tank, extended power take-off shaft, outboard bearing, elec. starter with batteries, cleaned and painted. Mfg. in 1948. Rebuilt and guaranteed.

Le TOURNEAU, SUPER C MOTOR Scrapers, CUMMINS DIESEL 6 cyl. engine. 21:00 x 24, 20 ply front; 18:00 x 24, 20 ply rear; 12 w. yd. struck capacity. Cleaned and painted. 4 in stock. Built in 1942. In very good condition.

Write, wire or phone

EHRBAR

Brooklyn, N.Y.—Evergreen 3-5000
Union, N. J. — Unionville 2-7400
Westbury, L. I.—Westbury 7-1990

1—80D Northwest Comb. Shovel & Dragline
1—D6 Cat. w/Almost new DDPCU Dozer
1—D2 Cat w/Traxscavator front end loader
1—Link Belt LS40, ½ yd. Backhoe
1—Lima ¾ yd. Paymaster
1—N.W. ¾ yd. Model 25
1—Duo-Way Scoop, Brand New

CHAS. M. INGERSOLL CO.
19930 Detroit Rd. Rocky River, O.
Edison 1-1010

FOR SALE

Used Model 160 Rex Single Pumpcrete, Remixer Serial No. CZ419, accessories, parts and 1000 feet pipe. Operated less than 100 Hours. Sell 85% new Purchase price.

T. L. JAMES & COMPANY, INC.
Kenner, Louisiana

(1) Model 8V-3 Euclid Loader.
(2) D-8 Caterpillar Tractors with Caterpillar Control Units, 2-U Series.
(2) Allis-Chalmers HD-19 Tractors with Control Units and Push Plates.
(1) Model "W" LeTourneau Scraper.
(2) Gar Wood 6-yard 2-wheel Scrapers-New.
(19) Model 43FDT Euclid Bottom Dump Units.
(1) Rex Dual Drum Paver.

FEHRS TRACTOR & EQUIPMENT CO.
1809-11 Cuming St. Omaha 2, Neb.

CARLYLE
INDUSTRIAL RUBBER PRODUCTS FOR EVERY PURPOSE

IMMEDIATE DELIVERY OF CONVEYOR, ELEVATOR AND TRANSMISSION BELTING — FUEL, WATER, SUCTION, AIR, STEAM AND WELDING HOSE

WHY WAIT
We have 8 to 48
RUBBER CONVEYOR BELTING

TOUGH COVERS—Heavy duty, specially compounded abrasive resistant rubber covers having high tensile strength. Thoroughly capable of withstanding the abrasive action of bulk materials. Properly vulcanized to the carcass to assure utmost performance, economically.

STRONG CARCASS — Constructed of finest quality 28 and 32 ounce tough cotton duck, properly treated and impregnated to avoid mildew from moisture and atmospheric conditions. Each ply thoroughly embedded in rubber to prevent ply separation.

FLEXIBILITY — Careful attention has been given in the construction of all belts to have the proper flexibility assuring the following desirable features; troughs easily, runs true on all idlers, gouge resistant, excellent for long and short hauls and slope installations.

Avoid delays in your production schedules!

We carry in stock for your immediate requirements, Conveyor Belting in widths from 8 inches to 48 inches.

Width	Ply	Thickness Top Cover	Thickness Bottom Cover	Type of Duck Carcass
8"	4	1/16"	1/32"	28 Oz.
10"	4	1/16"	1/32"	28 Oz.
12"	4	1/16"	1/32"	28 Oz.
14"	4	1/16"	1/32"	28 Oz.
16"	4	1/8"	1/32"	28 Oz.
18"	4	1/8"	1/32"	28 Oz.
20"	4	1/8"	1/32"	28 Oz.
20"	5	1/8"	1/32"	28 Oz.
24"	4	1/8"	1/32"	28 Oz.
24"	5	1/8"	1/32"	28 Oz.
26"	5	1/8"	1/32"	28 Oz.
30"	4	1/8"	1/16"	32 Oz.
30"	5	1/8"	1/16"	32 Oz.
30"	6	1/8"	1/16"	32 Oz.
36"	6	1/8"	1/16"	32 Oz.
42"	5	1/8"	1/16"	32 Oz.
48"	8	1/8"	1/16"	32 Oz.

INQUIRE FOR SIZES NOT LISTED.
ELEVATOR TRANSMISSION & V-BELTING ALSO IN STOCK

All our belting made by the leading belting manufacturers.

Write for Free Booklet on Installation, Care & Maintenance of Conveyor Belting.

SEND US YOUR INQUIRIES FOR OTHER RUBBER PRODUCTS.

CARLYLE RUBBER CO., Inc.
62-66 Park Place, New York 7, N. Y.
Phone: Digby 9-3810

4482 Ft. Chgo.-Pneu. 800 HP 3/60/2300 V. Air Compressor
60 & 40 Ton Ohio 70 Ft. Boom Diesel Locomotive Cranes
25 Ton American 50 Ft. Boom Gasoline Locomotive Crane
10—10000 Gal. Cap. Horizontal Steel Storage Tanks
45 Ton Plymouth Flexomotive Diesel Locomotive

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.

TRACTORS

ALLIS-CHALMERS, Model HD 7, 63" tread, 19" shoes, hyd. operated Gar Wood bull-dozer, starter, canopy top, cleaned and painted. Mfg. in 1947. Good condition.

ALLIS-CHALMERS, Model HD-19 Diesel Crawler Tractor, with Gar Wood cable bull-dozer and Le Tourneau power control unit, enclosed cab, cleaned and painted. Mfg. in 1948. In very good condition.

ALLIS-CHALMERS, Model HD-19 Diesel Crawler Tractor, with Le Tourneau power control unit only, enclosed cab, cleaned and painted. Mfg. in 1948. In very good condition.

CATERPILLAR Model D-6 Crawler Tractor, 62" tread, 18" shoes, 6 cyl. engine. No starter, front end pump, with La Plante-Choate, hyd. angle blade, 18 new pads, cleaned and paint-ed. Mfg. in 1941. In good condition.

CATERPILLAR Model R-4 gasoline Crawler Tractor, standard gauge, 13" shoes, hand crank, La Plante-Choate hyd. bulldozer, front end pump. In very good condition.

CATERPILLAR Model D-7 Crawler Tractor with Le Tourneau cable bulldozer. No starter. Cleaned and painted. New in 1942. Good condition.

CATERPILLAR Model D-8 Diesel Crawler Tractor, 22" shoes, with La Plante-Choate power control unit, cable bulldozer, canopy, cleaned and painted. In excellent condition.

INTERNATIONAL - HARVESTER, Model TD-6, 50" tread, with Isaacson hydraulic bulldozer. New in 1947. In fair condition.

INTERNATIONAL - HARVESTER, Model TD-9, 60" tread with Bucyrus-Erie hyd. bull-dozer. Mfg. in 1946. In very good condition.

INTERNATIONAL - HARVESTER, Model TD-14, 74" tread with Bucyrus-Erie hyd. bulldozer. New in 1947. In excellent condi-tion.

INTERNATIONAL - HARVESTER, Model TD-14, 86" tread, 18" shoes, Bucyrus-Erie hyd. bulldozer, rear power take-off, hoodside doors, elec. starter. Engine has new block, sprocket, 1 front idler, top and bottom rollers, front idler guides, pins and bushings. Cleaned and painted. In excellent condition.

INTERNATIONAL - HARVESTER, Model TD-18, 74" tread, new 18" shoes, starter and lights, cab, sprocket rock deflectors, front idler shields, with Bucyrus-Erie hyd. bull-dozer, new chains. Cleaned and painted. Mfg. in 1947. In very good condition.

INTERNATIONAL - HARVESTER, Model TD-24 Diesel Crawler Tractors, with Bucyrus-Erie cable blade and B-E model D-29 power control unit, canopy. Very late models. 3 in stock. Carry new guarantee.

Write, wire or phone

EHRBAR

Brooklyn, N.Y.—Evergreen 3-5000
Union, N. J. — Unionville 2-7400
Westbury, L. I.—Westbury 7-1990

D8—IH w. angle & DDPCU, good.
D4—7] bull blade, Huber 7 ton road roller, Cat. Diesel eng., (8800 power unit)
Graders, 511 Adams & 11 Cat. tandems.
A. W. Badger crane, A1. all above is good equipment.

UNITED MOTOR EQUIPMENT
914 Spring St., N. J. Rt. 25, Elizabeth, N. J.
Elizabeth 3-9013

PUMPCRETES

Rebuilt Current Models
For Sale or Rent
CONCRETE EQUIPMENT COMPANY
312 E. Wisconsin Ave.
Milwaukee 2, Wis.

CONTRACTOR'S SURPLUS EQUIPMENT

FOR SALE

1—Ditson Chain Saw
1—3" Gorman Centrifugal Water Pump
1—4" Sterling Centrifugal Water Pump
1—4" Carter Centrifugal Water Pump
1—4" Marlow Single Acting Diaphragm Water Pump
1—4" Carter Double Acting Diaphragm Water Pump
1—6" Carter Centrifugal Water Pump
1—Bucyrus-Erie Rock Grapple
1—35 H.P. Steam Boiler, completely rebuilt
1—Caterpillar D-6 Tractor w/Lapiant Hydraulic angle dozer blade
1—LeTourneau Rooter, Model K-30
1—Frink V Hydraulic Snow Plow, w/wing
1—Haegar, Model 10-S Cement Mixer
1—Seaman Pulvic Mixer, Model MHD72-55
1—Brothers, 16-wheel rubber tired roller
1—Hercules, 7-ton, 3-wheel roller
1—Buckeye Spreader, s/Keystone Attachment
1—Westinghouse Portable Generator Set, Model MG-4
1—Kohler Portable Generator Set, Model A-21
1—1200 Gallon Water Tank, perfect condition
1—Caterpillar D-7 Tractor w/double drum power controlled Unit & Dozer blade

R. F. CARPENTER, INC.
ALBURG, VERMONT

PILING

Need
STEEL SHEET PILING?
RENT OR BUY IT!
"FASTER from FOSTER"
LARGEST STOCKS IN U. S.
All Lengths • All Sections
Also Corrugated Steel Sheet Piling
Foster's rental rates give you a low fixed expense for competitive bidding purposes.
Pile Hammers & Extractors For Rental
Rails•Track Accessories•Wire Rope•Pipe
L.B. FOSTER CO.
PITTSBURGH 30, PA. CHICAGO 4, ILL.
HOUSTON 2, TEX. NEW YORK 7, N.Y.

We do a Nation-Wide business in

STEEL SHEET PILING

New & Used — Rented & Sold

54 pcs. 60 ft. Carn. M115-Chicago
450 pcs. 37-20 ft. Beth. SP4-Alabama
270 pcs. 27-25 ft. Carn. M112-Minnesota
234 pcs. 20 ft. Inland 122-Mississippi
337-pcs. 20-19 ft. Carn. M116-Buffalo, N. Y.

Other lengths & sections at various locations

All sizes Vulcan & McKiernan Pile Hammers & Extractors for Rent and Sale—Shop Rebuilt
Regardless of location of your job, wire or write

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

FOR SALE

1—Caterpillar No. 10 Diesel Power Grader
1—Austin-Western Patrol Sweeper
1—F.W.D. Truck, Model S.U. with Willett underbody scraper; also Frink Snow Plow Frame on same

This equipment is in good working order. All priced for immediate sale; offered subject to prior sale.

JOHN J. KING
Monroe, N. Y. Phone: 3-3581

FOR SALE

1—4500 MANITOWOC DRAGLINE 140 ft. Boom 6 yd Dragline Bucket. Less Than 2 Years Old, Waukesha Diesel Power.

CHAS. M. INGERSOLL CO.
19930 Detroit Ave. Rocky River, Ohio
Edison 1-1010

FOR SALE

2912 Square feet of PLASTIC FACED PLYWOOD UNIFORMS, STEEL FRAMING, 6 corners and NECESSARY HARDWARE. $3,000 f.o.b. Albu-querque, N. M. Used twice.
ONE No. 4 KENT FLOMASTER continuous mixer complete with air-cooled gasoline engine. Used one week. $1200, f.o.b. Albuquerque, N. M.

PYRAMID PUMICE-CRETE SYSTEM, INC.
121 S. Yale Ave. Albuquerque, N. M.

WANTED

WANTED
BATCHING PLANT

For concrete aggregates. Small plant complete, ready to operate. Approxi-mately 300 to 400 barrel cement bin complete with elevator, etc. and approx-imate 100 ton-2 compartment aggregate bin. Write full details to the

HOWAT CONCRETE COMPANY, Inc.
#2 "S" Street, S. W. Washington 4, D. C.

WE BUY OR SELL

All Types of
TRENCHING MACHINES
AIR COMPRESSOR RENTAL CO.
19615 NOTTINGHAM RD. CLEVELAND
Kenmore 1-8000

WANTED
TRACTORS & SCRAPERS

Caterpillar & International Harvester
SEABOARD EQUIPMENT CO. INC.
28 West 44 Street New York 18, N. Y.
Phone: Bryant 9-5571

WANTED

Plymouth Gasoline Locomotives
Model AL, 3 ton, 24" gauge.
Parson Backfiller, Model 32.
HYPER-HUMUS CO.
Newton, N. J.

WANTED
#12 CATERPILLAR
OR
#112 CATERPILLAR

P. O. Box 95, Perkasie, Pa.
Phone 2081

FOR SALE

Reliance Crushing Plant

18" x 30" Crusher—30' Bucket Elevator
50" x 17' Roller Screen—100 Ton Capacity Bin
2 Gas. Engine Power Units

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

FOR SALE
Late model, used

Adnun Blacktop Paver

finishes up to 12 feet.
Top Condition. Priced to sell.

KIELY CONSTRUCTION CO.
P. O. Box 65 Butte, Montana

SAVE $150.00

NEW GOVT. SURPLUS
CHICAGO PNEUMATIC
Model 22 **SUMP PUMP**
3-INCH DISCHARGE AT OPENING
Capacity 180 GPM at 20' HEAD
Capacity 125 GPM at 30' HEAD
Capacity 55 GPM at 55' HEAD
Each Unit Comp. with Spare Parts
REG. LIST PRICE $315. $165 F.O.B. PHILA.

J. JACOB SHANNON & CO.
214 N. 22nd ST. PHILADELPHIA 3, PA.
The Oldest Equip. House in Phila.

FOR RENT

Motor Truck Cranes 20 ton capacity
2—Bay City — 1—Lorain
100 foot boom — 15 foot jib
Semi Trucks — Winch trucks
Derrick trucks — Low Boy trailers
Air Compressors — Portable Welders

L. I. Griffin & Sons, Inc.
5002 South Hanna St.
Fort Wayne, Indiana
Phone H-3295

New Guaranteed . . . 60 TON HYDRAULIC JACKS

Navy Surplus
ILLUSTRATED CATALOG 60% off
BERKELEY DISTRIBUTORS INC.
76 JOHNSON AVE. HACKENSACK, N. J.

FOR SALE

2—AC-14 tractors with 12-14½ yd. woolridge scrapers
1-AC-14 angle dozer hydraulic
1—AC-10 bulldozer hydraulic
1—Angledozer blade complete with side arms for AC-14 hydraulic dozer
1—50 ft. boom for Lorain 75
1—1 yd. concrete bucket
All rebuilt, can be seen working. Write:
S. SAWKA,
111 Ridgewood Road, East Hartford 8, Conn.

WILL RENT

Complete Sheet Pile Driving Outfit, Consisting of Lorain 820 Crane, 120 Ft. Boom; Cleaver-Brook Boiler, 125 H. P.; McKiernan Terry & Vulcan Hammers, Extractors, etc.; Available - October 1st.
WILL SUB-CONTRACT
WARD CONSTRUCTION SERVICE, INC.
203 Finance Bldg., Newport, Ky.

FOR SALE

1947 ¾ yd Buckeye

Model 70 Chrysler Industrial Engine Back-Hoe 35 foot boom, ½ yd Clam, Wide tracks. Excellent Condition.

WM. A. KUTZKE
Phone 482 Portage, Wis.

FOR RENT—DREDGE 12"

785 H.P. Diesel Hydraulic Cutterhead, Portable Steel Hull, all Necessary Attendant Plant, Pontoons & Pipe.

MIDWEST DREDGING CO.
5720 Oliver Street Minneapolis, Minnesota

WILL LEASE

Lorain 820 Crane New Condition, equipped with 95 Ft. Boom, 25 Ft. Jib, Light Plant, Air Steering Controls. Used only short period on steel erection. Available October 5th.

CONSTRUCTION SERVICE, INC.
203 Finance Bldg. Newport, Kentucky
AXtel 8764

FOR SALE USED EQUIPMENT

General contractors equipment consisting of Sixty Ton switching Locomotives, Twenty, Twenty-five and Thirty tone dinkeys, Twelve and sixteen yard Air Dumps, Jordan Spreader, Large stationary crushing plant with forty two inch primary gyratory crusher.

DOMINION CONSTRUCTION CORP. LTD.
16 Aldbury Gardens, Toronto 12, Ont.

FOR RENT

½ YD. UNIVERSAL TRUCK CRANE
D-7 BULLDOZER
TD-9 DOZER SHOVEL
LORAIN ¾ YD. CRAWLER

FR-7736, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

FOR RENT

NORTHWEST MODEL 80D SHOVEL
SIX EUCLIDS

TRIPLE CITIES CONSTR. CO.
Phone 2-6366 BINGHAMTON, N. Y.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on following pages

Polk, Powell and Hendon

Engineers—Consultants
Harry H. Hendon—
Hugh A. Powell

Water Systems, Sewers and Sewage Treatment Plants, Steam and Hydro Plants, dams, drainage, industrial buildings, municipal planning reports, plans, estimates and construction supervision.

620 Chamber of Commerce Bldg.,
Birmingham 3, Ala.

Palmer and Baker, Inc.

Consulting Engineers

For Problems of Transportation
Subaqueous Vehicular Tunnels
Rock Tunnels
Utility Tunnels
Bridges
Grade Separations
Highways
Airports
Traffic Studies
Parking Problems
Waterfront & Harbor Structures

Mobile, Alabama

John S. Cotton

Consulting Engineer
Hydroelectric, water supply, irrigation, and multiple purpose projects; flood and erosion control; river basin development planning; dams and their foundations; tunnels; marine structures; valuations; rates.
28 Brookside Dr., San Anselmo, Calif.

Heron Engineering Co.

Chemical, Mining, Industrial and Hydraulic Plants, Irrigation, Water Supply, Power and Sewerage Systems, Large Rockfill Dams, Airports, Oil, Gas and Water Pipe Lines.
2060 So. Acoma, Denver 10, Colorado
Chama, New Mexico

Duval Engineering & Contracting Co.

General Contractors
FOUNDATION BORINGS
For Engineers and Architects.

Jacksonville, Florida

Patchen & Zimmerman

Engineers
Construction Plant, Cofferdams, Structures, Industrial Plants, Dams, Sewerage and Sewage Treatment, Water Supply and Treatment, Supervision, Surveys, Reports.
Daniel Field Airport,
Augusta, Ga.

E. J. Albrecht Company

Engineers—Contractors

Steel, chemical and power plants, Dams, flood control projects, railroads, Bridges, tunnels, heavy excavation.

2626 West 26th Street, Chicago 8

Alvord, Burdick & Howson

Charles B. Burdick
Louis B. Howson Donald H. Maxwell
Consulting Engineers

Water Works	Sewerage
Water Purification	Sewage Treatment
Flood Relief	Power Generation
Drainage	Appraisals

Room 1401
20 North Wacker Drive, Chicago

Consoer, Townsend & Associates

Water Supply—Sewerage—Flood Control & Drainage — Bridges — Express Highways—Paving—Power Plants, Appraisals — Reports — Traffic Studies—Airports.
351 East Ohio St., Chicago 11, Illinois

De Leuw, Cather & Company

CONSULTING ENGINEERS
Transportation, Public Transit and Traffic Problems

Industrial Plants	Grade Separations
Railroads	Expressways
Subways	Tunnels
Power Plants	Municipal Works

150 North Wacker Drive
Chicago 6, Ill.

79 McAllister Street
San Francisco 2, Calif.

Greeley and Hansen

Engineers
Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
220 S. State Street, Chicago 4

Harza Engineering Co.

Consulting Engineers
L. F. Harza
E. Montford Fucik Calvin V. Davis
Hydro-Electric Power Projects
Transmission Lines, System Management, Dams, Foundations, Harbor Structures, Soil Mechanics
400 W. Madison St., Chicago 6, Ill.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam - - Hydraulic - - Gas
Public Utilities - - Industrials
231 So. La Salle St. Chicago 4

Sargent & Lundy

ENGINEERS
Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision
Chicago

Soil Testing Services, Inc.

Theo. W. Van Zelst Carl A. Metz
John P. Gnaedinger

Soil Borings	Rock Coring
Engineering Testing of Soils	
Soil & Foundation Reports	

525 N. Noble Street Chicago 22

Interstate Engineering

Consulting Engineers
Design and Supervision of Municipal Improvements
Water Works, Sewage, Drainage, Surveys
Foundation Borings
Rock Island, Illinois

Jenkins, Merchant & Nankivil

Consulting Engineers
Water Systems, Power Development, Flood Control, Airports, Traffic Surveys, Municipal Improvements, Sewerage, Industrial Plants, Recreational Facilities, Investigations and Reports.
505 East Miller St., Springfield, Ill.

Boyd E. Phelps, Inc.

Engineers
Water Supply and Purification
Sewage and Industrial Waste Treatment
Power Generation, Airfields, Reports, Investigations, Appraisals.
622½ Franklin St., Michigan City, Ind.

Chas. W. Cole & Son

Sewerage, SewageTreatment, Industrial Wastes, Water Supply, Water Treatment, Airports, Industrial Buildings.
Chas. W. Cole, 6r. Chas. W. Cole, Jr.
Ralph J. Bushee, M. J. McErlain
Wilbur H. Gartner
220 W. LaSalle, South Bend, Ind.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on preceding and following pages

Stanley Engineering Company,
Consulting Engineers

Airports - Drainage - Electric Power
Flood Control - Industrial - Rate
Studies - Sewerage - Valuations -
Water Works
Hershey Building, Muscatine, Ia.

J. Stephen Watkins

J. Stephen Watkins G. B. Watkins
Consulting Engineers
Complete engineering field crews available for field surveys or construction layout work.
East High Street Lexington, Kentucky
Branch office 210 Heyburn Building, Louisville, Kentucky

G. Douglas Andrews Associates

Engineering Consultants
General Engineering
and Consulting Services
Valuations and Management
212 Washington Avenue
Towson, Baltimore 4
Maryland

Saxe, Williar & Robertson

ENGINEERS—CONSULTANTS
Bridges—Structures—Foundations
Industrial Buildings

Baltimore Richmond
Maryland Virginia

Whitman, Requardt and Associates

Engineers — Consultants

Civil — Sanitary — Structural
Mechanical — Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul Street
Baltimore 2, Maryland

Chas. T. Main, Inc.

Engineers
Design and Supervision of
Construction for Industrial Plants
Electrical, Steam and
Hydraulic Engineering
Investigations, Reports and Appraisals
Chamber of Commerce Bldg.
80 Federal St., Boston, Mass.

Metcalf & Eddy

ENGINEERS
Investigations Reports Design
Supervision of Construction
and Operation
Management Valuation Laboratory
Statler Building 131 Sutter St.
Boston 16 San Francisco 4

Philip B. Streander and Affiliates

Consulting Sanitary Engineers
Water Supply, Treatment, Distribution
Sewage, Sewage Treatment
Plans, Supervision, Reports
683 Atlantic Ave. Boston 11, Mass.

Chas. F. Dingman

Engineer
Consultant on Construction Cost
Valuation of Physical Assets
Estimates of Cost of Projected Construction or Expansion
Established 1925
Palmer, Mass.

Black & Veatch

Consulting Engineers

Water - Sewage - Electricity - Industry

Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

4706 Broadway, Kansas City 2, Mo.

Burns & McDonnell Engineering Company

Consulting Engineers *50th Year*
Water Works, Light and Power, Sewerage, Reports, Designs, Appraisals
Rate Investigations.
Box 7088 Country Club P. O.
95th & Troost, Kansas City 2, Mo.

Harrington & Cortelyou

Consulting Engineers
Frank M. Cortelyou
E. M. Noerr P. M. Cortelyou, Jr.
Movable and Fixed Bridges of All Types, Foundations, and Related Structures.
1004 Baltimore Kansas City 6, Mo.

Russell & Axon

Consulting Engineers
Geo. S. Russell F. E. Wenger
Joe Williamson, Jr.
Water Works, Sewerage, Sewage Disposal, Industrial and Power Plants, Appraisals.
408 Olive Street Municipal Airport
St. Louis 2, Mo. Daytona Beach, Fla.

Sverdrup & Parcel, Inc.

Consulting Engineers
Bridges, Structures and Reports, Industrial and Power Plant Engineering.
Syndicate Trust Bldg., St. Louis 1, Mo.
220 Bush St., San Francisco 4, Calif.

William J. Wenzel

Consulting Engineer

Great Falls, Montana

Developing the Great Northwest

Edwards and Kelcey

ENGINEERS
Surveys - Reports - Economic Studies
Design - Supervision - Transportation
Traffic - Parking - Terminals - Highways - Expressways - Grade Separations -Tunnels - Bridges - Water Supply
3 William Street Newark 2, N. J.

Benjamin L. Smith & Associates

Engineers
Investigations—Reports
Designs—Supervision—Valuations
Municipal Engineering and
Public Utilities
11 North Pearl St. Albany 7, N. Y.

E. Lee Heidenreich, Jr.

Consulting Engineer
Quarries Plant Layout
Crushing Plants Flowage
Milling Plants Methods
Concrete Products Plants Design
Appraisals
67 Second St. Newburgh, New York

Barker & Wheeler

Water Supply Utility and
Sewerage Industrial
Sewage Disposal Valuations
Power Systems Reports

New York City, 11 Park Place
Albany, N. Y. 36 State St.

Morris Berman

Consulting Engineer
Building designs and Bridge stress analysis by Stressometer (as described in ENR Nov. 17, 1938) for economy of design.
Magnetic location of concealed steel.
150 Nassau St., NYC WO 2-2791

Clinton L. Bogert Associates

Consulting Engineers
Water and Sewage Works
Refuse Disposal Industrial Wastes
Drainage Flood Control
624 Madison Ave., New York 22, N. Y.

Bowe, Albertson & Associates

Engineers
Water and Sewage Works—Industrial Wastes—Refuse Disposal—Municipal Projects—Airfields—Industrial Buildings—Reports—Designs—Estimates—Valuations—Laboratory Service.
116 William St., New York 7, N. Y.

Francis L. Brown

Consulting Engineer
Airports, Highways, Water Supply, Sewage-Disposal, Industrial Bldgs., Bridges
46 Cedar St. New York, N. Y.

Buck, Seifert & Jost

Consulting Engineers
(Formerly Nicholas S. Hill Associates)
Water Supply — Sewage — Hydraulic Developments. Reports and Valuations.
Chemical and Biological Laboratories.
New York City, 113 E. 18th St.

L. Cott

Consulting Engineer
Prestressed Concrete
Bridges and Frames
198 Broadway New York 7, N. Y.

Hugh L. Cooper & Co.

Incorporated

General Hydraulic Engineering

Including the design, financing, construction and management of hydro-electric power plants.

350 Fifth Ave., New York 1, N.Y.

Ebasco Services Inc.

ENGINEERS
CONSTRUCTORS
BUSINESS CONSULTANTS

Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering

Two Rector Street New York
209 S. LaSalle Street Chic. 4, Ill.
1604 K Street, N.W. Wash. D. C.

Fay, Spofford & Thorndike

Engineers
Charles M. Spofford Ralph W. Horne
John Ayer William L. Hyland
Dion A. Bowman Frank L. Lincoln
Carroll A. Farwell Howard J. Williams

Bridges and Industrial Plants
Water Supply and Sewerage Works
Port and Terminal Works Airports

Valuations, Investigations, Designs, Supervision of Construction.

11 Beacon St., Boston, Mass.
420 Lexington Ave., N. Y.
(Graybar Bldg.)

Fraser-Brace Engineering Co., Inc.

DESIGN - CONSTRUCTION - REPORTS - APPRAISALS
COMPLETE MANAGEMENT OF PROJECTS

10 East 40th St.,
New York 16, N. Y.

Hardesty & Hanover

Consulting Engineers

Successors to Waddell & Hardesty

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris, Inc.

CONSULTING ENGINEERS
Harbors, Piers & Bulkheads, Drydocks, Foundations, Soil Mechanics.
Sanitary & Industrial Waste Disposal.
Water Supply, Flood Control.
Airports, Highways, Bridges.
Power, Industrial Plants.

27 William Street New York
3 William Street Newark
Fidelity Phila. Trust Bldg. Philadelphia
Ferry Bldg. San Francisco

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges and Structures
New York, N. Y., 55 Liberty St.
Kansas City, Mo., 921 Walnut St.

Knappen Tippetts Abbett Engineering Co.

Ports, Harbors, Flood Control, Power, Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

62 West 47th Street, New York City

Lockwood, Kessler & Bartlett, Inc.

ENGINEERS — SURVEYORS

General Engineering Services
Aerial and Ground Surveys
Photogrammetric Mapping
Domestic and Foreign

32 Court St. Brooklyn 2, N. Y.

Modjeski and Masters

Consulting Engineers
Design, Supervision, Reports, Inspection and Investigations, of Bridges, Structures, and Foundations.
535 Fifth Ave. State Street Bldg.
New York, N. Y. Harrisburg, Penna.

Moran, Proctor, Freeman & Mueser

Consulting Engineers
Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.
New York 17, N.Y., 430 Lexington Ave.

PARDO, PROCTOR, FREEMAN & MUESER
Ap. Corrfos 614 Caracas, Venezuela.

Parsons, Brinckerhoff, Hall & Macdonald

ENGINEERS
Airports, Bridges, Tunnels, Highways, Traffic and Transportation Reports, Subways, Foundations, Harbor Works, Valuations, Power Developments, Industrial Buildings, Dams, Sewerage, Water Supply.

51 Broadway, New York 6, N. Y.

Malcolm Pirnie Engineers

Civil & Sanitary Engineers

Malcolm Pirnie Ernest W. Whitlock
Richard Hazen G. G. Werner, Jr.

Investigations, Reports, Plans, Supervision of Construction and Operations, Appraisals and Rates

25 W. 43rd St., New York 18, N. Y.

The Pitometer Company

Engineers
Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Penstock Gaugings
New York, 50 Church St.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on preceding pages

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts Assoc.

Weston Gavett-Stanley N. Williams

Consulting Sanitary Engineers

Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals

50 Church Street, New York 7

Sanderson & Porter

Engineers and Constructors

New York — Chicago
San Francisco — Los Angeles

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye, Stevenson & Value

Consulting Engineers

Successors to
Elwyn E. Seelye & Company
101 Park Avenue
New York 17, N. Y.

Airports, Highways, Dams, Concrete, Steel, Welding, Foundations, Stadia, Appraisals & Industrial Plants.

Elwyn E. Seelye, Albert L. Stevenson, Burnside R. Value

H. S. Woodward, Austin M. Rice, C. H. Hamilton, V. J. Pacello, C. M. Throop, R. Sahlberg, W. D. Bailey, J. U. Wiesendanger, A. R. Kelly.

Ole Singstad

Consulting Engineer

TUNNELS

Investigations, Reports, Design
Specifications, Supervision

24 State St., New York 4, N. Y.

Frederick Snare Corporation

Engineers—Constructors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7
1400 South Penn Square, Philadelphia

Havana, Cuba — Lima, Peru
Bogota, Colombia, Caracas, Venezuela,
San Juan, Puerto Rico, Guayaquil, Ecuador

D. B. Steinman

Consulting Engineer

BRIDGES

Design, Construction,
Strengthening, Investigations,
Reports, Advisory Service

117 Liberty St., New York 6, N. Y.

Sy-Co Engineers

G. A. Syversen, G. Randolph Syversen
H. Syversen—Consultants
Industrial Plants, Commercial Buildings, Power Plants,
Materials Handling Systems
Estimates—Reports—Design
Supervision
39 Broadway — New York 6, N. Y.

Taylor, Henry W.

Water Supply, Sewerage
Garbage Disposal, Incineration
Industrial Wastes Disposal
Hydraulic Developments

11 Park Place, New York City

The J. G. White Engineering Corporation

Design—Construction
Reports—Appraisals

80 Broad Street, New York 4

James M. Caird

Established 1895

C. E. Clifton, H. A. Bennett
Chemists and Bacteriologist
WATER ANALYSIS
Tests of Filter Plants
Cannon Building, Troy, N. Y.

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings

Troy, N. Y. — Ft. Lauderdale, Fla.

The Austin Company

Design and Construction

Manufacturing and Process Plants
Airports & Air Transport Buildings
Railroad Terminals and Facilities
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories

Reports and Plant Location Surveys

New York — CLEVELAND — Los Angeles
Chicago — Houston — Oakland
Detroit — Seattle

Havens and Emerson

W. L. Havens — C. A. Emerson
A. A. Burger — F. C. Tolles — F. W. Jones
CONSULTING ENGINEERS
Water, Sewage, Garbage, Industrial Wastes, Valuations—Laboratories

Leader Bldg. — Woolworth Bldg.
Cleveland 14 — New York 7

Burgess & Niple

Civil and Sanitary Engineers

Consultants since 1908

Water supply, treatment and distribution
Sewage and industrial wastes disposal
Investigations, reports, appraisals, rates
Plant operation, laboratory, plans and specifications.

544 E. Broad St. — Columbus 15, Ohio

Jones, Henry & Schoonmaker

(formerly Jones & Henry)

Consulting Sanitary Engineers

Water Works, Sewerage & Treatment
Waste Disposal
Security Building — Toledo 4, Ohio

Toledo Testing Laboratory

Engineers—Chemists

Inspection — Tests
Research — Development
Concrete - Asphalt - Soils - Ceramics
Foundation Investigation
Borings — Diamond Drilling
Load Tests

1810 North 12th St. — Toledo 2, Ohio

Glancy, Carle & Marseglia

Engineers

Steel & Concrete Structures
Industrial, Commercial Buildings
Design, Supervision, Reports
1506 Market Street, Youngstown, Ohio

Benham Engineering Co.

ENGINEERS

Webster L. Benham
M. Am. Soc. C. E.
Water Supply & Purification, Sewerage, Sewage Disposal, Electric Light & Power, Roads, Drainage
Am. National Bldg., Oklahoma City, Okla.

Capitol Engineering Corporation

Engineers—Constructors—Management

Bridges — Dams
Planning — Airports
Sewage Systems — Water Works
Design and Surveys — Roads & Streets
Executive Offices Dillsburg, Penna.

Joseph G. Conrath

Consulting Engineers

Concrete, Steel & Aluminum Structures, Buildings, Bridges, Bins, Tanks, Towers, Catenary, Stadia, Dams, Tunnels, Airports, Foundations, Harbors, Highways, Sanitary.

439 East 6th St. — Erie 3, Pa.

Brookhart & Tyo, Inc.

Engineers

Highways
Industrial Buildings
Bridges and Structures
Design, Estimates, Reports

1720 N. Front St. — Harrisburg, Pa.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Water Works, Sewage, Industrial Wastes & Garbage Disposal — Roads, Airports, Bridges & Flood Control.
Town Planning, Appraisals, Investigations & Reports.

Scranton Pa. — Pittsburgh, Pa.
Harrisburg, Pa.

Aero Service Corporation

Photogrammetric Engineers

Aerial Topographic Maps
Precise Photo Mosaics
Plastic Relief Models

236 E. Courtland St.,
Philadelphia 20, Pa.

Albright & Friel, Inc.

Consulting Engineers

Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.

121 So. Broad St., Philadelphia 7, Pa.

Day & Zimmermann, Inc.

Engineers

Designs, Construction, Valuations
Reports and Management
Public Utilities and Industrials
Philadelphia

New York Packard Building Chicago

Frederick H. Dechant

Consulting Engineer

Chairman of the Board,
Frederic R. Harris Inc.
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Gas Plants
Philadelphia: Fidelity Phila. Trust Bldg. — New York: 27 William St.

Fridy - Gauker - Truscott & Fridy

Architects & Engineers

Water . Sewerage . Industrial Waste Incineration . Power & Distribution
Airport . Building . Town Planning

1331 Arch Street . Philadelphia 7, Pa.

William A. Goff, Inc.

General Engineering and Consulting Services

Water, Sewerage, Refuse Incineration, Industrial Buildings, Power Plants, Airports, Town Planning, Plans, Supervision, Valuations, Reports.

Broad St. Station Bldg., Phila. 3, Pa.

Hunting, Larsen & Dunnells

Engineers

Industrial Plants—Structures
Bridges—Steel and Reinforced Concrete
Design and Supervision—Reports

1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles, Inc.

Engineers

Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.
Pittsburgh, Pa.

Gilbert Associates, Inc.

Engineers and Consultants

Design and Supervision of
Steam, Hydro, Water Supply,
Sewage Disposal, Diesel Plants
and Airports, Valuations, Laboratory

Reading, Pa. — 412 Washington St.
New York — 61 Broadway
Houston — Oil & Gas Building
Washington, D. C. — 1417 K St., N. W.

Michael Baker, Jr., Inc.

THE BAKER ENGINEERS
CIVIL ENGINEERS, PLANNERS, AND SURVEYORS.
MUNICIPAL ENGINEERS
Airport Design—Sewage Disposal Systems—Water Works Design and Operation—Cons. Engr.—Surveys & Maps.

Rochester, Pa. — Jackson, Miss.

Lacy, Atherton & Davis

Architects and Engineers

Hotel Sterling Building,
Wilkes-Barre, Pa.

Myers & Noyes & Associates

Consulting Engineers

Water Supply, Sewage, Flood Control, Shore Protection, Irrigation and Reclamation, Reports and Valuations
2204 Tower Petroleum Bldg., Dallas, Texas
320 Wilson Building
Corpus Christi, Texas

Lockwood & Andrews

Consulting Engineers

Airports, Paving, Industrial Plants, Drainage & Sewerage, Site Locations, Soils & Foundations, Water Supply, Structures, Harbor Works, Valuations, Reports — Design — Supervision.

Union Nat'l Bank Bldg., Houston, Tex.

Engineering Services

Civil & Testing Engineers

S. D. Caplan, M.ASCE, A. M. Sans, M.ANTM.
Reports, Investigations
Water Supply & Distribution
Municipal Engineering
Materials Testing
Continental Bk Bldg., Salt Lake City

Hutchings & Milani, Ltd.

Engineers & Constructors

Industrial - Roads - Power Plants - Dams - Tunnels - Harbor Works - Foundations - Hotels

CARIBBEAN WEST INDIES - SOUTH AMERICA
BERMUDA-CARIBBEAN CONSULTANTS, LTD.
Architects & Engineers.

Design - Reports - Investigations

L. C. Milani, ASCE; C. W. Abbott, R.I.B.A.; N. J. Sweeney, A.I.A.; P. Culler; T. F. Carr; H. J. Williams; S. H. Pace; W. Weir.

BOTH HEAD OFFICES AT HAMILTON, BERMUDA.

Inspecting and Testing

Robert W. Hunt Co.

Inspecting and Testing Engineers

Inspection and Tests
of Materials
Supervision of Construction
for
Utility Plants,
Buildings, Bridges,
Machinery and Equipment

General Offices and Laboratories
175 West Jackson Boulevard, Chicago
New York — Pittsburgh — St. Louis

The Haller Testing Laboratories, Inc.

Testing and Inspecting of Construction Materials

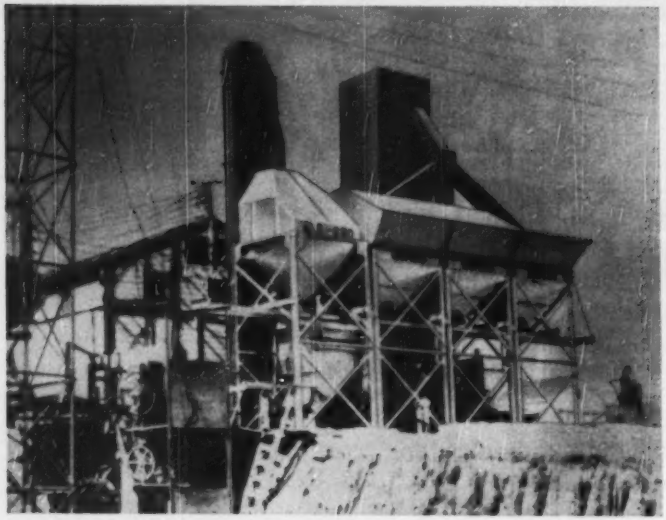
801 2nd Avenue, New York 17, N. Y.
New York, N. Y. • Boston, Mass.
New Haven, Conn. • Plainfield, N. J.

The Gulick-Henderson Laboratories, Inc.

Inspecting & Testing Engineers

524 Fourth Ave., Pittsburgh 19, Pa.
25 West 43rd St., New York 19, N. Y.
431 South Dearborn St., Chicago 5, Ill.

NEW PRODUCTS



Interchangeable Units Provide a Multi-Purpose Batch Plant

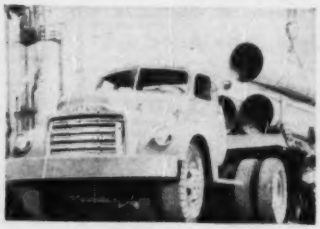
GAR-BRO UNIT BATCH PLANT for aggregate and bulk-cement storage and batching incorporates numerous combinations and applications. The individual units come in single or dual aggregate styles that can be hooked up in series with a bulk-cement bin unit and an auxiliary cement silo if additional storage is required. The units are built in capacities to handle the charging of 1-yd mixers, or smaller. The weigh hopper, mounted on a double-rail track, travels from bin to bin without interruption, and may be set to dump from either side or either end. The plant features bin frames mounted on skids or demountable wheels for easier transporting. An added feature of the Gar-Bro unit batch plant is the self-closing bin gate. —GAR-BRO MFG. CO., 2416 E. 16TH ST., LOS ANGELES, CALIF.

Flameless Paint "Burner"

Prent paint remover features a metal surface heated by propane gas burned in a closed combustion chamber. Advantages claimed include: No burned or scorched spots appear; does not penetrate into seams of the wood; high degree of safety in use and during lighting; danger of fire is practically excluded; and can be used for more than 100 hr with contents of one bottle of propane gas. The Prent burner is supplied with reducing valve for connecting to any gas bottle.—AMSTERDAMSCHE METAALWAREN GROOTHANDEL, N. V., WARMOESSTRAAT 88, AMSTERDAM C, HOLLAND.

Surveying-Stake Markers

Sleeve made of heavy durable paper can be stapled to surveying stakes to serve as a permanent marker. It incorporates a scale in hundredths or tenths of a foot. Advantages claimed are: Simplifies stake marking, makes stakes visible at distances of 600 ft and more, and indicates amount of cut or fill by direct length indication on the sleeve.—W. D. HARGUS, 501 WEST H. ST., BRAWLEY, CALIF.



Diesel-Powered Truck Tractor

Two new model diesel-powered highway tractors are designed to haul loads of 45,000 and 55,000 lb gross combination weight. Advantages claimed for these units include: Increased fuel economy, lower maintenance cost, and long life. Powered by a refined version of the GM 4-71 diesel engines, they are rated at 133 hp at 2,000 rpm, and 400 ft/lb of gross torque at 1,250 rpm. A wide variety of rear axles are available. Air brakes are standard.—GMC TRUCK & COACH DIV., GENERAL MOTORS CORP., 660 S. BLVD., E., PONTIAC 11, MICH.

Lightweight Electric Tamper

Tarwater tamper delivers 1,800 blows per minute. Weighing 48 lb., it is powered by any high-cycle generator or converter. One to four tampers may be powered by a 1,500 to 5,000-w generator. Tools are held on the 2-position tool holder by two cap screws. —TARWATER RAILWAY SUPPLY CO., INVESTMENT BLDG., REDLANDS, CALIF.

Carbide-Tipped Saw Blades

Blades with carbide tips are now available for the Quick-Saw portable electric saws. These blades are espe-

(Continued on page 117)

ROCK RATED!

THE NEW P&H MODEL 955-A (2½ YDS.)

with *MAGNETORQUE** swing

Watch this new machine get its teeth into a rock job and see what "rock-rated" really means to you. It's *designed* . . . every inch from boom point to crawler shoes . . . to make rock handling easier . . . more profitable for you.

Unbeatable—point for point

P&H Magnetorque eliminates swing friction clutches . . . their troubles and replacement costs. It gives you smoother, faster swings . . . for the life of your machine.

Greater Stability gives you more power at the tooth point . . . and greater work capacity.

Direct Acting Hydraulic Control . . . easier on machine, easier on operator . . . smoother and greater holding power through full wrap brakes and clutches.

P&H Rapid Reversing Planetary Chain Crowd gives you snappier dipper action. It's more accurate. And crowd chain outlasts 25 to 30 crowd cables.

Get the facts about P&H all-welded strength and Added Values! The 955A is a 2½ yd. version of the P&H 1055 (3 yd. shovel) . . . the machine that has set new low-cost production records everywhere. Write for Bulletin X122, today.

*Trade-Mark of Harnischfeger Corporation for electro-magnetic type clutch.

P&H **EXCAVATORS**
4404 West National Ave.
Milwaukee, Wisconsin

HARNISCHFEGER CORPORATION

VATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS and ELECTRODES • SOIL STABILIZERS • CRAWLER and TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES

This man knows what his wire rope costs him

He's quit guessing. Now he knows what his wire rope *actually* costs. He learned long ago that purchase price alone doesn't tell him a thing. So he devised a simple system of records—records that show the amount of work his ropes do, and their cost per unit of work.

This is something that Bethlehem has always recommended. To get a true picture of rope costs—an accurate picture—you should have figures showing the cost per ton-mile, yard of rock moved, or other unit that best applies to your business.

The keeping of such records is good, sound practice. Gives you a chance to compare rope values. That we like—for we're always ready to stack the Bethlehem product against all comers. You'll be, too—when you use this rope consistently.

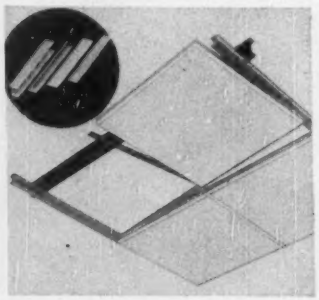
LET YOUR RECORDS TELL YOU!

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

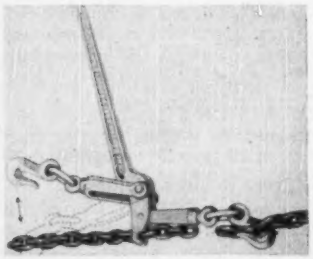
Export Distributor: Bethlehem Steel Export Corporation

cially recommended for cutting Transite, Cemesto board, Masonite, Formica, and other abrasive or plastic composition materials. They are available in three sizes—7 in. with 18 teeth, 8 in. with 20 teeth, and 9 in. with 22 teeth.—The Black & Decker Mfg. Co., Towson 4, Md.



Acoustical Ceiling-Tile System

Direct-to-metal suspension system permits attaching kerfed acoustical ceiling tile for air-tight ceilings without the use of backing materials. The system is all aluminum. Parts used in the Alumi-Lock system are: I-runner, I-runner splicer, T reinforcement spline, flat spline, and L-molding. The 12-ft I-runner is tied or clipped in conventional fashion to carrying members. Each tile is supported by I-runner flange and two reinforcement T-spline flanges.—Midwest Acoustical & Supply Co., 1171 W. 69th St., Cleveland 2, Ohio.



Tension-Pull Load Binder

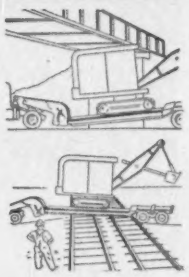
Leverage action of Canton load binder permits exerting pulls of up to 4,500 lb on the chain. Each operation of the handle takes up slack and tightens until desired tension is reached. The drop-forged hook has a 360-deg swivel action.—Canton Cast Products, 2510 Thirteenth St., N.E., Canton, Ohio.

Transformer Welder

Welding-heat adjustment on new line of ac transformer welders is controlled electrically by an ac/dc reactor. The welder has no moving parts.

(Continued on next page)

The ROGERS 4-FEATURE POWER-LIFT DEMOUNTABLE GOOSENECK



← STOOPS TO CLEAR LOW OVERHEAD OBSTRUCTIONS

← RAISES ITS DECK TO CLEAR HIGH BANKED CROSSINGS

Patents Pending

EMBODYING A NEW AND VALUABLE FEATURE IN TRAILER SERVICE

It embodies the kind of versatility that makes every haul *easier, faster, more profitable.*

Loading, at a *lower* angle, is *faster. Larger* tires carry *heavier* loads legally. Unloading, reloading, detouring are *avoided* through quick adjustment of the deck height to *different conditions* encountered.

It's equally as rugged as the standard Rogers Gooseneck regardless of its detachable feature. And it's available on most Rogers Trailers and adaptable to many trailers of other makes.

Bring your equipment up-to-date and be in a position to handle operations more efficiently and more profitably.

Export Office: 50 Church St., N. Y. 7, N. Y. • *Cable Address:* "Brosciles"

ROGERS TRAILERS

EXPERIENCE builds 'em PERFORMANCE sells 'em

ROGERS BROTHERS CORPORATION, 135 Orchard St., ALBION, PA.

Your Sandblast Problems Answered IN THIS *FREE* FOLDER

WRITE FOR YOUR COPY TODAY

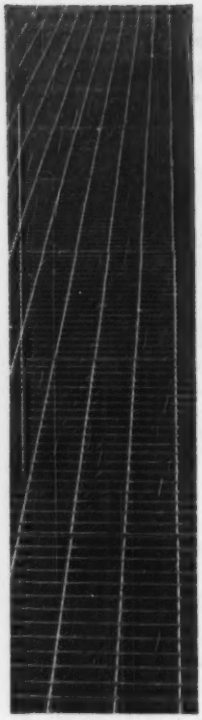
Charles Y. Spears
Sanstorm Mfg. Co.
Santa Clara and H Sts.
Fresno, California

Please send your free Sanstorm folder

Name .....

Address .....

City ..... State .....



get the grating with all these features—

1. Maximum ventilation and light.
2. Minimum cleaning and painting surface.
3. Always safe, non-skid footing.
4. Rugged durability and long-life rigidity.
5. Completely fire-proof.
6. Quick, easy to install.

GET KLEMP Open Steel GRATING

Planning close quarters? . . . KLEMP will fabricate Grating to fit any location, exactly to your special requirements. Welded or riveted.

Write Today for Detailed Catalog

Also ask about KLEMP Steel Safety Mats, Floorsteel Flexible Floor Armor that rolls out like a rug and Hexsteel Heavy Duty Surface Armor.

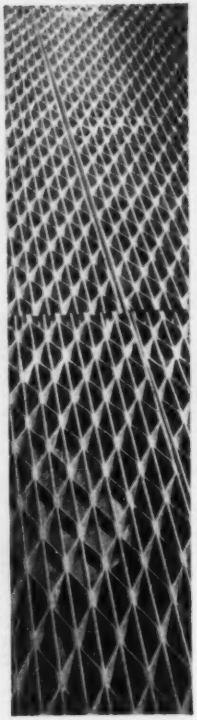
P.S. Our deliveries are excellent now!

KLEMP SURE FOOTED STEEL DIAMOND DIGESTED GRATING

WM. F. KLEMP CO.

"Steel Flooring Specialists"

6608 S. Melvina St., Chicago 38, Ill.



"BERG"

CONCRETE SURFACER MODEL A

"Berg" equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.

4667 SPRING GROVE AVE. CINCINNATI 32, OHIO

"GUNITE" CONCRETE

(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.

1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill.; B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.; Philip D. Barnard, Dist. Mgr. 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans

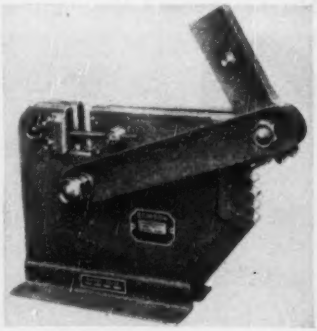
See our catalog in Sweet's

Hayward Buckets

Use this Class "E" Clam Shell Bucket for handling crushed stone, gravel, sand and other bulk materials.

THE HAYWARD CO., 48-50 Church St., N. Y.

Main range control provides five taps. Sets can be furnished for operation on single-phase 60-cycle supply current, either 220/440 dual voltage, 440/550, or 220/440/550 volts in 200, 300, 400, and 500 amp sizes.—HOBART BROS. CO., HOBART SQUARE, TROY, OHIO.

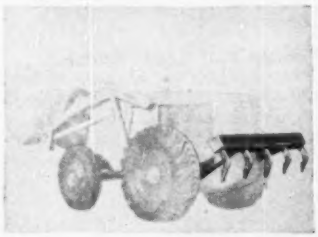


Hand-Lever Bar Cutter

Samson cutters will cut any size rod from ⅛-in. to their rated capacity without changing knives. Knives are located at the top so that a number of bars may be laid down on the machine and dropped into the opening one by one. Cutters are available in two sizes. The 50/23 cuts rounds to ⅞ in., squares to ¾ in., and flats to ⅞x2¼. The 50/26 cuts rounds to 1 in., squares to ⅞ in., and flats up to ½x3 in.—JULIUS BLUM & CO., INC., 532 W. 22ND ST., N. Y. 11, N. Y.

Drill for Concrete

Carbide drill for use in the Cleco Handi-Drill is said to penetrate concrete at a rate of 5 in. per min. and to drill as many as 500 holes without resharpening. Capacities are ¼ to 1 in., with lengths of 6, 12, and 18 in. The Handi-Drill is a 9-lb hand-held unit designed for working in close quarters on all types of masonry work.—CLECO DIV., REED ROLLER BIT CO., P. O. Box 2119, HOUSTON, TEX.



Hydraulic Scarifier

Hydraulic scarifier is designed as an auxiliary attachment for Hough Payloaders. It utilizes the existing hydraulic system on the Payloader. Ripper bar, which clears hitch when

(Continued on page 121)

36 LeTOURNEAU Earthmovers speed huge HIRAKUD DAM *in India*

Large rubber tires gave Tournapulls necessary traction and flotation for driving through water and mud.

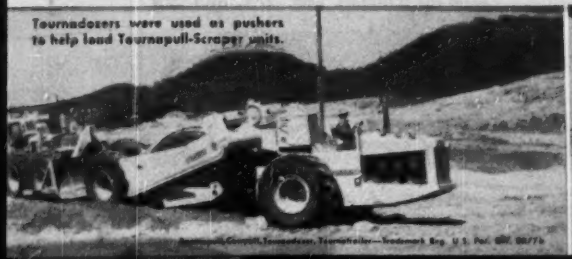
At Sambalpur, Orissa, the Government of India is starting work on Hirakud Dam, first hydroelectric and irrigation project in the Mahanadi Valley development program. The job involves building a 3-mile long dam across the Mahanadi River, and construction of two 10-mile dikes, each 12 to 50 feet high along the banks.

Over 25 million yards of earth will be moved, most of it by a fleet of LeTourneau rubber-tired machines: including 2 self-powered Tournapull-Scrapers, 10 Tournadozers, 6 tractor-drawn Carryall Scrapers, and 18 Tournatrailer hauling units.

To level a large site for shops, warehouses, and material storage yards, the big rubber-tired bulldozers quickly cleared aside all plant growth and handled the preliminary rough grading. On the final grading, the Tournapulls moved rocky clay, which was soft and sticky when wet, but extremely hard when dry. 650′ haul was over rough, dusty roads, up grades to 20% and through several deep, water-filled mudholes. After four days of on-the-job training, local men, who never before had seen equipment like these Tournapull-Scrapers, were skillfully using electric controls on the 2 machines to excavate, haul and spread the material at the rate of 1584 cu. yards per 8-hour working day.

Through this high rate of production, these rubber-tired earthmovers soon completed preliminary leveling, and the large fleet of LeTourneau equipment is now speeding construction of the earthfill dam and dikes. For more information on what this modern equipment can do for you, call your nearest LeTourneau Distributor TODAY.

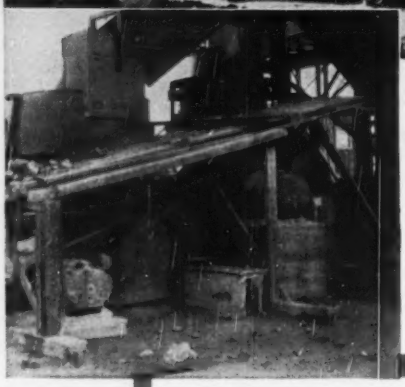
R. G. LeTOURNEAU, Inc.
Peoria, Illinois



Tournadozers were used as pushers to help load Tournapull-Scraper units.

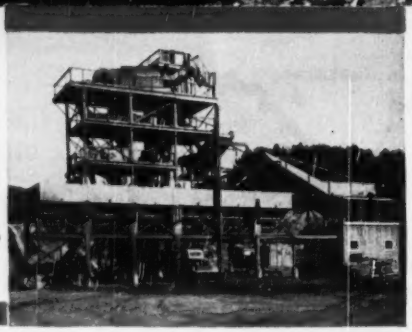
Tournapulls hauled 9 cu. yd. loads at speeds up to 30 m.p.h.

SIX SIZES OF AGGREGATE 125-150 tons per hour



Primary Breaker is a 10-B Telsmith Gyratory Crusher followed by 36" Style S Gyrasphere Crusher

Telsmith Washing Screen, Twin Screw Sand Classifier, and Sand Drag



Plant Equipment is all TELSMITH

24" x 5' Plate Feeder • 5' x 12' Two-Deck Scalper Screen • 10-B Gyratory Crusher • 36" Style S Gyrasphere Crusher • No. 6 Belt Elevator, 65' long • 48" x 16' Ajax Washing Screen • Two 3' x 10' Two-Deck Vibro-King Screens • 5' x 12' Two-Deck Vibro-King Screen • 20" x 15' Twin Screw Coarse Sand Classifier • 60" x 35' Sand Drag • 24" x 108', 18" x 57', 18" x 36', 18" x 84' Conveyors • Four 15" x 15" Duplex and Two 15" x 15" Simplex Bin Gates.

Six sizes—two of sand and four of gravel—all meeting the State of Massachusetts Highway Specifications are produced by this modern aggregate plant owned and operated by the General Stone and Sand Corp., of Pittsfield, Mass.

Entirely designed and completely equipped by Telsmith engineers, the plant's planned capacity was 100 tons per hr., but it is regularly turning out 25% to 50% more. It ran the entire first season without one shutdown.

Again Telsmith Complete Plant Service proves its time and money-saving advantages; and Telsmith equipment demonstrates its efficiency and extra capacity.

Send for Bulletins 266, 271, and 274

SMITH ENGINEERING WORKS, 500 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Smgworks, Milwaukee

51 East 42nd St. New York 17, N.Y. — 211 W. Wacker Drive Chicago 6, Ill. — 713 Commercial Trust Bldg. Philadelphia 2, Pa. — 238 Main Street Cambridge 42, Mass. — Boebck Eqpt. Co. Milwaukee 2, Wis. — A. N. Wigle, 362 S. Ashburton Rd. Columbus 15, Ohio

Clyde Equipment Co., Portland 9, Ore., & Seattle 4, Wash. • Mines Eng. & Eqpt. Co., San Francisco 4, Calif. • Interstate Equipment Co., Statesville, N. C. • Rish Eqpt. Co., Charleston 22, & Clarksburg, W. Va. — Roanoke 7, & Richmond 10, Va. • Wilson-Weesner-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.

raised, has five adjustable shanks with H&L removable teeth. Specifications include: Ripping width, center-to-center of outside teeth, 70 in.; penetration, 8 in.; raised height, 21 in.; teeth spacing, 17¼ in.; teeth shanks, 1½x3x18. Complete weight is 1,100 lb. Present production is for the ¾-yd Model HF Payloader; others are contemplated. — KAY-BRUNNER STEEL PRODUCTS, INC., EQUIPMENT DIV., 2721 ELM ST., LOS ANGELES 65, CALIF.

Improved Terra Cobra

More powerful 225-hp engine and larger 24-ply 24:00 x 25 low-pressure tires have been adopted as standard equipment for the Model TC-S142 Terra Cobra. Substantially increased speed, gradeability, traction, flotation, and load-carrying capacity are claimed. —WOOLDRIDGE MFG. CO., SUNNYVALE, CALIF.

New Product Briefs

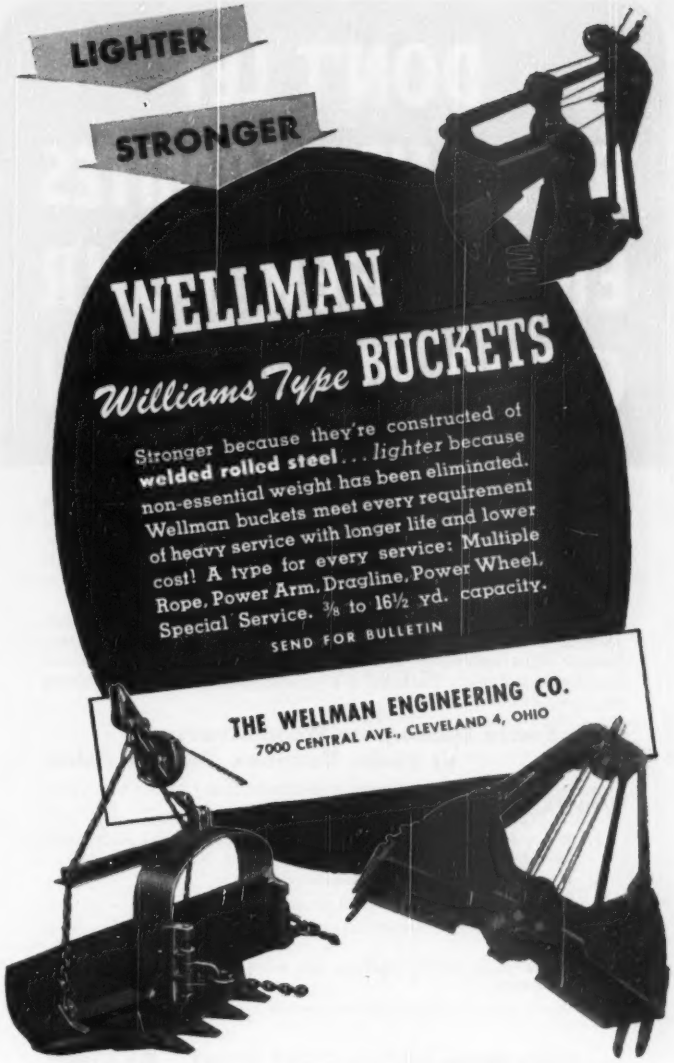
Water softening equipment combines features of hot-process softener and zeolite softener. Zeolite is used as a second stage following first stage in which lime is the single reagent. Manufactured by: Cochrane Corp., Philadelphia, Pa.

Pipe-flange spreader uses two removable wedges on forcing screws to effect spreading. Maker: Owatonna Tool Co., Owatonna, Minn.

Arc-welding electrode (W-52—AWS Class E7010) is specifically designed for high-quality welding of low-alloy high tensile steels, such as pipe lines, in all positions. Produced by: General Electric Co., Schenectady 5, N. Y.

Solvent and thinner for bituminous base paints and synthetic enamels is produced by Speco, Inc., of Cleveland, Ohio.

Small-capacity heaters, for gas or oil firing, are being produced with 100,000 and 200,000 btu/hr outputs. Maker: Prat-Daniel Corp., Thermobloc Div., East Port Chester, Conn.


LIGHTER
STRONGER
WELLMAN
Williams Type BUCKETS
Stronger because they're constructed of welded rolled steel... lighter because non-essential weight has been eliminated. Wellman buckets meet every requirement of heavy service with longer life and lower cost! A type for every service: Multiple Rope, Power Arm, Dragline, Power Wheel, Special Service. ⅜ to 16½ yd. capacity.
SEND FOR BULLETIN
THE WELLMAN ENGINEERING CO.
7000 CENTRAL AVE., CLEVELAND 4, OHIO

New Transits and Levels by Experts

Each Buff is dependable, accurate and economical.

Send for catalog #329.

Headquarters for Repairs

Every make of instrument, renewed by Skilled Workmen.

Our Shops are located at Jamaica Plain, Boston, Mass.

Buff & Buff Mfg. Company

HENRY A. BUFF, *President.*

Since 1922

GUNITE "Shot with air"

for CONSTRUCTION and MAINTENANCE

Experience That Counts

Write today for complete details of our services

INDIANA GUNITE & Construction Co., Inc.

226 NORTH ALABAMA STREET

INDIANAPOLIS 4 Indiana

DON'T LET ROT AND TERMITES ENDANGER YOUR GOOD REPUTATION

You protect yourself and your clients when you specify WOLMANIZED Pressure-Treated Lumber. It stops costly damage due to wood decay and termites. It gives your clients better construction and prevents trouble that neither of you want to experience.

WOLMANIZED Lumber is pressure-treated. It provides sure, lasting protection against rot and termites—lasts 3 to 5 times longer than untreated wood. It's a time-tested, service-proved building material. Besides, it's clean, odorless, non-leaching and paintable.

Stop Costly Damage to Wood Structures at These Common Danger Points

Here are some of the common conditions that call for the use of WOLMANIZED Pressure-Treated Lumber:

1. *Where excessive ground moisture, rain or thaws cause early decay failures.*
2. *Where wood is subject to termite attacks.*
3. *Where wood touches concrete or masonry.*
4. *Where steam and vapor from industrial processes promote wood decay.*
5. *Where walls, floors, ceilings are subject to condensation from refrigeration.*
6. *Where wood is exposed to moisture in humidified buildings.*

FREE BOOKLET TELLS THE STORY

Get all the facts. See why WOLMANIZED Pressure-Treated Lumber provides sure, lasting protection against wood decay and termites. Write for "The WOLMANIZED Story" today.

AMERICAN LUMBER & TREATING COMPANY

General Offices: 1630 McCormick Bldg., Chicago 4, Illinois

Branch Offices: Baltimore, Boston, Jacksonville, Fla., Little Rock, Ark., Los Angeles, New York, Portland, Ore., San Francisco

For SURE protection build with . . . **WOLMANIZED PRESSURE TREATED LUMBER**

Manufacturers' Publications

Troughing, Return Idlers — Information on troughing and return idlers is contained in two new folders. Covered in the pamphlets are features of design showing how they apply to various uses. — THE CONVEYOR CO., 3620 E. SLAUSON AVE., LOS ANGELES 58, CALIF.

Deep Well Pumps—Various types of drive and typical installations are featured in 20-p catalog describing deep-well turbine pumps. Graphic portrayal of details is obtained by the use of color printing in construction views. Pumps listed in Bulletin 4700 are furnished for wells with inside diameters of 4 in. or larger, and with capacities from 12 to 3,000 gpm. — THE DEMING CO., SALEM, OHIO.

Anti-Rust Paint—Descriptive bulletin lists the features of Rustrem anti-rust paint, and other Rem products. The bulletin contains complete instructions for the use of Rustrem, which can be applied over rust without wire brushing, scraping, or sand-blasting.—SPECO, INC., 7308 ASSOCIATE AVE., CLEVELAND 9, OHIO.

Pipe Fittings—Cast iron and malleable pipe fittings for every pipe-line use are listed in this catalog. Listings are complete on each page to eliminate references to other pages for details. Each fitting is illustrated by a photograph and a dimension drawing.—STOCKHAM VALVES & FITTINGS, BOX 2592, BIRMINGHAM 2, ALA.

School Construction — Booklet describes several features claimed for one-story wood schools. Illustrated with color photographs of actual school buildings and designs, the booklet contains much worthwhile information. — WEST COAST LUMBERMEN'S ASSN., 1410 S. W. MORRISON ST., PORTLAND 5, ORE.

Sectional Scaffolding—Information on typical job assemblies, load tests of equipment, safety rules, methods of assembly, and other data make up this 8-p Waco catalog. Bulletin PS-20 shows basic methods and parts, and illustrates how they can be combined to meet many requirements.—WILSON-ALBRECHT CO., INC., 3665 WOODDALE AVE., MINNEAPOLIS 16, MINN.

Pumps—Worthington announces the release of two new pump catalogs.

Bulletin W-306-B1 describes the Monobloc centrifugal pumps, single and two stage, size 1 to 5. Bulletin W-318-B21 describes the two-stage double-suction centrifugal pumps.—WORTHINGTON PUMP & MACHINERY CORP., HARRISON, N. J.

Schoolroom Ventilation—Booklet describes advantages of the Nelson system of classroom ventilation. It graphically portrays mechanical features of the system by a series of line-art illustrations.—HERMAN NELSON DIV., AMERICAN AIR FILTER CO., INC., MOLINE, ILL.

Dual-Fuel Diesel—Bulletin 117 describes and illustrates the Nordberg 4-cycle 16-in. Duafuel diesel engine. This bulletin illustrates various power applications, showing how the engine can be used on gas fuel with pilot oil, on oil fuel, or on intermediate proportions of either fuel. It can also be used with sewage or other low-heat-value gases.—NORDBERG MFG. CO., CHICAGO & OKLAHOMA AVES., MILWAUKEE 7, WIS.

Electronic Calculations—Uses of electronic calculators is discussed in this 22-p catalog. Of special interest to construction men, is a discussion of the use of electronics in determining pile-driving impact. Complete engineering data is provided for an actual pile-driving operation. — INTERNATIONAL BUSINESS MACHINES CORP., 590 MADISON AVE., NEW YORK 22, N. Y.

Fastening Devices – Three types of fastening devices for anchoring needs in floors, walls, and ceilings are listed in new literature. Available in 66 sizes, they include toggle bolts, machine screw lead anchors, and expansion bolts. The bulletin contains dimensions and specifications for each unit in the line. —HOLUB INDUSTRIES, INC., SYCAMORE, ILL.

Fire-Hose Couplings – Complete line of fire-hose couplings and coupling accessories are described in Bulletin 7. In addition to describing the various couplings, the bulletin also contains thread data for all standard hose-coupling threads.—HOSE ACCESSORIES CO., 17TH & LEHIGH, PHILADELPHIA 32, PA.

Welding and Cutting Movie—Motion picture shows the use of the oxy-acetylene flame for welding and cutting. It explains various processes, and shows what they will do. Running time of the film is 20 min. — INTERNATIONAL ACETYLENE ASSN., 30 E. 42ND ST., NEW YORK 17, N. Y.

ADVERTISERS IN THIS ISSUE

Alexander Hamilton Institute 55
Allis-Chalmers Mfg. Co. 80
American Cyanamid Co. 4
American Lumber & Treating Co. 122
American Mutual Liability Insurance Co. 62, 63
American Steel Dredge Co., Inc. 83
Armco Steel Corp. 16
Automatic Sprinkler Corp. of Am. 11

Bay City Shovels, Inc. 18
Bethlehem Steel Co. 116
Blaw Knox Div. Blaw Knox Co. 22
Buff & Buff Mfg. Co. 121

Cast Iron Pipe Research Assoc., Inc. ..56, 57
Caterpillar Tractor Co. 8, 9
Ceco Steel Products 84, 85
Cement Gun Co. 98
Century Geophysical Corp. 67
Chicago Bridge & Iron Co. ..... 2nd cov.
Clark Equipment Co. General Div. 15
Clow & Sons, James B. 6
Clyde Iron Works, Inc. 51
Colorado Fuel & Iron Corporation, Wickwire Spencer Steel Div. 45
Concrete Surfacing Machinery Co. 118
Cook Bros. Equipment Co. 94

David House Moving Co., E. F. 83
Detroit Steel Products Co. 59
Dravo Corp. 100

Economy Forms Corp. 50

Fir-Tex Insulating Board Co. 66
Flexible Steel Lacing Co. 90
Flintkote Co., The 72
Fruehauf Trailer Co. 60

General Electric Co. 48, 49
Goodrich Company, The, B. F. 3
Gunite Concrete & Construction Co. 118
Gunite Florida Service, Inc. 83
Gurley, W. & L. E. 66

Harnischfeger Corp. 115
Hartford Fire Insurance Co. 77
Hayward Co. 118
Heil Co. 68, 69
Hyatt Bearings Div., G. M. C. 10

Indiana Gunite & Construction Co., Inc. .. 121
Industrial Brownhoist Corp. 74
International Steel Co. 74
Irving Subway Grating Co. 86

Jaeger Machine Co. 86
Jones & Laughlin Steel Corp. 79
Josam Mfg. Co. 61
Joy Mfg. Co. 7

Keasbey & Mattison Co. 14
Kennedy Valve Mfg. Co. 90
Kinnear Mfg. Co. 87
Klemp Co., Wm. F. 118

Lamson & Sessions Co. 13
LaPlant-Choate Mfg. Co. 1
LeRoi Co. 73
LeTourneau, Inc., R. G. 119
Leupold & Stevens Instruments, Inc. 2
Lincoln Electric Co. 76

M & H Valve & Fittings Co. 98
Mayo Tunnel Equipment Co. 100
McGraw-Hill Book Company 82
McKiernan-Terry Co. 12
Moretrench Corp. 87
Murphy Diesel Corp. 5

National Terrazzo & Mosaic Ass'n. 83
Norma Pencil Co. 53

Owen Bucket Co. 86

Peerless Pump Div., of Food Machy., Corporation 82
Phoenix Bridge Company 98
Pittsburgh, Des Moines Steel Co. 71

Raymond Concrete Pile Co. ..... 3rd cov.
Republic Steel Corp. 92
Rodgers Hydraulic, Inc. 40
Rogers Bros. Corp. 117

Sanstorm Mfg. Co. 117
Sauerman Bros., Inc. 95
Sika Chemical Co. 99
Smith Engineering Works 120
Sprague & Henwood, Inc. 95
Staedtler, Inc., J. S. 78
Stone & Webster Engineering Corp. 46
Stratex Instrument Co. 100

Taylor Forge & Pipe Works 65
Timber Engineering Co. 95
Timber Structures, Inc. 97
Timken Roller Bearing Co. ..... 4th Cover
Trailer Village, Inc. 95
Tri-Lok Co. 100

U. S. Steel Supply Co. 91
U. S. Steel Subsidiaries 91
Universal Form Clamp Co. 20

Wellman Engineering Co. 121
Wickwire Spencer Steel Div. of The Colorado Fuel & Iron Corp. 45

Yeomans Brothers Co. 75

Zonolite Co. 89

Professional Services . . 111, 112, 113

SEARCHLIGHT SECTION

(Classified Advertising)

Employment
Positions Vacant 105, 106
Positions Wanted 106
Part Time Work 106
Employment Services 106

Special Services
Contract Work 106

Educational
Books 106

Notices
Proposal 103, 104

Equipment
(Used or Surplus New)
For Rent 111
For Sale 106-111
Piling 110
Pipe 108
Rail 109
Surveying Instruments 106

Wanted
Equipment 110

ENGINEERING NEWS-RECORD

E. E. WEYENETH, *Manager* — HOWARD T. OLSEN, *Business Manager*

Sales Representatives: D. S. Robertson and E. A. Callahan, Jr., 330 W. 42nd St., *New York;* Fred G. Hudson, L. H. Hunt, W. G. Payne, 520 N. Michigan Ave., *Chicago;* J. W. Otterson, R. Dorland, 68 Post St., *San Francisco;* A. B. Cozzens, 17th & Sansom Streets, *Philadelphia;* E. E. Duff, Jr., Hanna Bldg., *Cleveland;* B. F. Horn, Penobscot Bldg., *Detroit;* W. E. Donnell, Continental Bldg., *St. Louis;* H. L. Keeler, 1111 Wilshire Blvd., *Los Angeles;* Ralph Maultsby, Rhodes-Haverty Bldg., *Atlanta;* J. H. Allen, First National Bank Bldg., *Dallas. Other Sales Offices:* 738-39 Oliver Bldg., *Pittsburgh;* 1427 Statler Bldg., *Boston;* Aldwych House, *London.*

Picketing and Free Speech

Do the free speech rights in the Constitution and the Taft-Hartley labor law protect peaceful picketing?

Until last year, the answer was: Yes. Now it is: No, if the picketing aims at an illegal purpose.

A sharp change in viewpoint has occurred in the Supreme Court and, necessarily, in the subsequent decisions of the National Labor Relations Board. The climax came last month in a decision of NLRB in the construction industry. It went a step beyond an earlier decision, also involving construction. While pertinent to construction, the new look toward picketing has wide application, affecting employers and unions in all industries.

Briefly, the latest legal finding:

Neither picketing, nor the threat to picket, is protected by either the Constitution or the Taft-Hartley law when it is used to seek an unlawful objective.

This now is the view of all five members of NLRB. It was expressed Aug. 10 in two simultaneous decisions, one of them involving a Colorado highway contractor, Henry Shore.

• Secondary boycotts the target—The board never went that far before. It had gone only part way. In resolving what appeared to be conflict between the free speech section of the Taft-Hartley law and its ban on secondary boycotts, the board decided in February, 1949, that Congress intended, above all, to kill secondary boycotts. Therefore, when a secondary boycott is involved, the free speech protection must yield.

The board split 3-2 in that decision. It, too, involved construction—Wadsworth Building Co., Kansas City. NLRB directed the carpenters union to stop picketing Klassen & Hodgson, builders, in an effort to induce them to cease doing business with the Wadsworth firm. Wadsworth made pre-fabricated housing, which Klassen & Hodgson erected.

In this case, the board had assumed that peaceful picketing constituted an expression of "views, argument, or opinion." This, the Taft-Hartley law says in section 8(c), may not be used as evidence of an unfair labor practice if there is no threat of reprisal or force or promise of benefit. This is the law's so-called "free speech" section.

The board also relied on the Supreme Court decision of 1940 in the case of Thornhill v. Alabama. In declaring unconstitutional a state law against picketing, the court said:

"In the circumstances of our times the dissemination of information concerning the facts of a labor dispute must be regarded as within that area of free discussion that is guaranteed by the Constitution."

• Picketing o.k. elsewhere—But the board reasoned further. If the picketing against Wadsworth is protected under free speech, then it nullifies the secondary boycott ban in Taft-Hartley. So a majority of the board decided that the free speech section of the labor law did not apply in situations involving secondary boycotts. But it made clear, at the same time, that it did not mean to abrogate the free speech protection in other kinds of union unfair labor practices. We discussed this in "Perspective" on March 10, 1949.

Then the Supreme Court began to deviate from the Thornhill principle. In April, 1949, two months after NLRB's "anguish of judgment" in the Wadsworth case, the court held that the Constitution did not protect peaceful picketing which violated a state antitrust law.

The case was Giboney v. Empire Storage & Ice Co., a Kansas City firm. The court upheld a state injunction to restrain an AFL ice drivers union from peacefully picketing Empire Storage in an effort to force the company to stop selling ice to nonunion peddlers. It said the injunction was valid as enjoining an offense against Missouri's antitrust law.

• Picketing not "speech" alone—Last May, the Supreme Court handed down three decisions that viewed peaceful picketing as being more than just "speech" and as having "far more potential for inducing action or nonaction than the message that pickets convey."

The court pointed out in these decisions that picketing, even though peaceful, has aspects that are more than speech. Therefore, it may be restricted, at least where undertaken for an objective.

NLRB took cognizance of this new view of the court when it took up Henry Shore's charges against the Denver Building Trades Council, AFL, and two affiliated unions.

Shore accused the labor organizations of trying to force him to hire all union members on the so-called Cherry Creek project—grading and surfacing three miles of state highway and building a bridge.

The unions first asked Shore to hire all union men; then they threatened to picket; then they picketed.

Since the court now holds that picketing goes beyond "speech," NLRB this time did not have to reconcile any conflict with the free speech section of Taft-Hartley. It found, then, that the threat to picket and the picketing amounted to attempts to cause Shore to violate the Taft-Hartley closed shop ban. The verbal request, however, without any threats, was found to be protected free speech.

It concluded, therefore, that any picketing or threat of picketing is unlawful if the objective is illegal.

• The illegal objectives — This means that unions may be stopped from picketing or threatening to picket in support of any unfair labor practice, such as:

1. To enforce featherbedding.
2. To force an employer to assign work to a particular union.
3. To further a secondary boycott.
4. To restrain or coerce employees re union membership.
5. To restrain or coerce an employer in the selection of his bargaining representative.
6. To attempt to cause an employer to discriminate against a worker because of membership or nonmembership in a union.

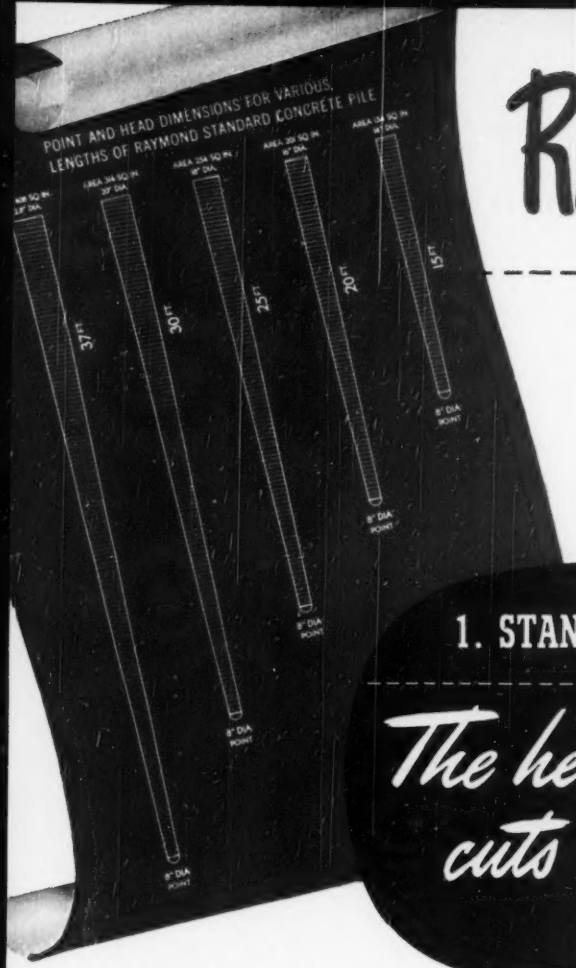
Picketing is permitted for such lawful purposes as (1) enforcement of wage demands and other lawful contract provisions, (2) obtaining recognition if no other union has already been certified, or (3) protest against an employer's unfair labor practice.

A few days ago NLRB heard the echo of its Wadsworth decision. The U. S. Court of Appeals at Denver upheld it. The court skipped over NLRB's tortured conclusion that free speech protection for picketing had to give way to the secondary boycott ban. The court had the benefit of the Supreme Court's recent decisions that picketing went beyond free speech and therefore was not protected.

Raymond MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD
2. STEP-TAPER
3. PIPE STEP-TAPER
4. COMPOSITE
5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements.



1. STANDARD PILES

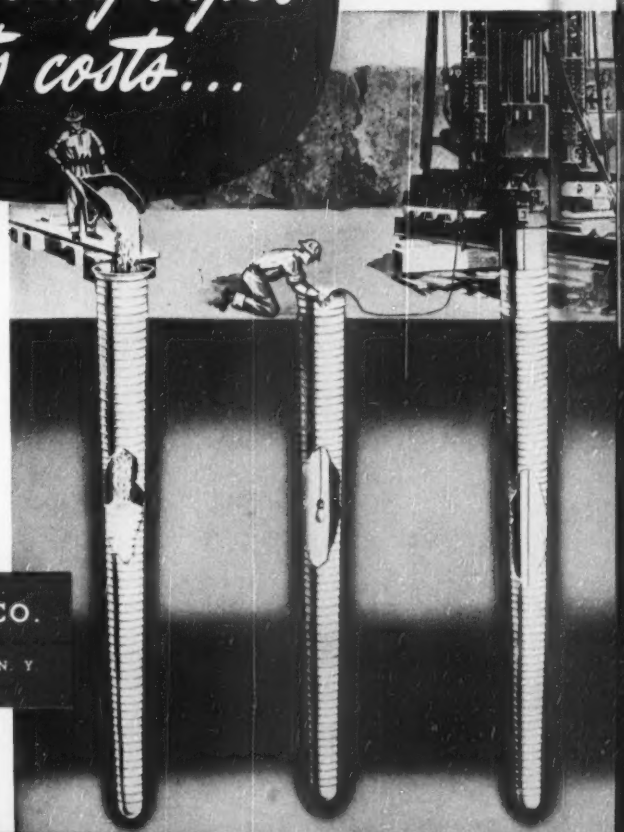
The heavy taper cuts costs...

Note that the permanent steel shell maintains the soil pressure developed during driving and while the concrete is setting, thus insuring a perfect pile free from distortion with a high load capacity.

Raymond Standard Concrete Piles have a heavy, uniformly tapered permanent steel shell. On friction piles, this taper acts like a wedge, giving these specific advantages:

1. Driving resistance is maintained.
2. The load is transmitted to the soil through the entire length of the pile.
3. The load can be carried by shorter piles, because of their greater carrying capacity.
4. Since shorter piles cost less to drive, the taper usually results in substantial savings.

Each of these statements has been tested and proved innumerable times. The evidence is at your disposal at any of our offices. Your inquiry is cordially invited.



Raymond CONCRETE PILE CO.

140 CEDAR ST., NEW YORK 6, N. Y

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.

More road maintenance—less grader maintenance with TIMKEN® bearings

THE Rome 402 Motor Grader shown below has Timken® bearings on the rear axle tandem drive assembly, the front wheels, the king pin and in the transmission.

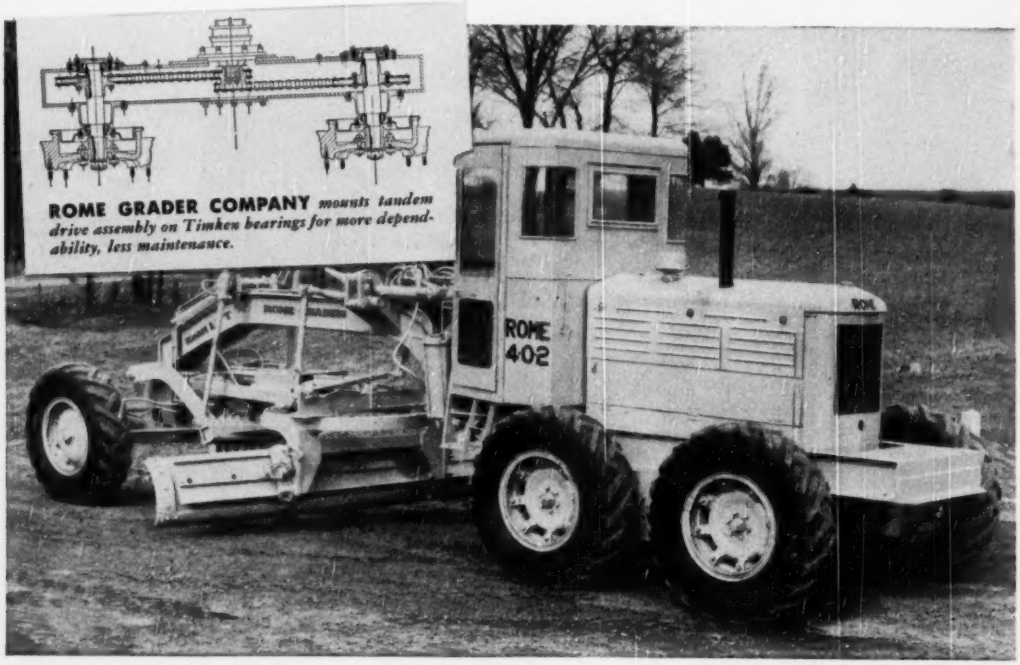
Because Timken tapered roller bearings reduce maintenance man-hours on the grader and help prevent breakdowns, it can stay on the job for long periods of continuous operation.

Timken bearings keep the wheels and shafts in rigid alignment, reducing deflection and play. This prevents wear on moving parts. They minimize friction—even under the heaviest loads—providing smooth, fast operation. They permit tighter closures that retain lubricants and keep dirt out. They normally last the life of the grader.

With tapered construction and line contact between rollers and races, Timken bearings take the toughest radial, thrust and combination loads. They're made of wear-resistant, shock-resistant Timken alloy steel. And they are manufactured to extreme precision.

If you make or use construction equipment, it will pay you to make sure it's Timken bearing equipped. Look for the trade-mark that's stamped on each bearing—"Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best


ROME GRADER COMPANY mounts tandem drive assembly on Timken bearings for more dependability, less maintenance.
ROME
402

POSITIVE ROLLER ALIGNMENT

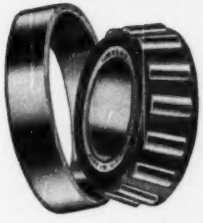
Wide area contact between roller ends and rib of the cone prevent Timken rollers from skewing. Result: bearings roll easier, last longer.

The Timken Company is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ▯ AND THRUST ▯→ LOADS OR ANY COMBINATION ✳